UNIVERSITY OF TAMPERE

Beginning the Dissertation Journey:
A Substantive Grounded Theory of Undergraduate Business Students' Experiences in the Thesis Planning Stage in a Finnish UAS.

School of Education

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Finnish bachelor students in universities of applied sciences publish thousands of theses annually as a mandatory curricular requirement. A multitude of students, faculty and working life organizations are involved in the process. This study utilized the grounded theory method to produce a substantive grounded theory of the undergraduate business student's experience in the thesis planning stage. The data was collected between October 2011 and January 2013 from five thesis planning workshop implementations with a total of 138 enrolled students. The data consisted of documentary data gathered from students in the form of student emails and stories, and of participant observation notes taken on one-on-one faculty–student consultancy sessions and classroom situations.

The key outcome of the study was a substantive grounded theory focused around the core category "getting the thesis plan done". The theory highlights the internal mental processes of the student (motivation, meta-cognition and cognition, emotions), student's doing, the stakeholders in the thesis process (student, peers, working life, faculty), and the four different kinds of interactional relationships between these stakeholders. Each of these components was described in further detail through its properties and their dimensions.

Findings clearly indicated that whether the students were motivated or not to engage in the thesis process, they tended to feel either suitably or overly challenged by it. Students wrestled with various motivational, cognitive, metacognitive and emotional challenges. Many sought faculty advising to resolve these concerns. Some faculty were motivated, committed and competent to advise, and facilitated students internal experience and doing. Other faculty failed to do so, often resulting in a negative motivational and emotional impact on the student. Students perceived commissioned working life theses as a motivating opportunity for professional learning, career building and networking. Negotiation, communication and collaboration between students and working life organizations proved, however, to be a problematic area for three reasons. Firstly, majority of students were not competent and self-reliant enough to liaise with organizations independently. Secondly, whilst many working life organizations were eager to work with young professionals, committed to build functioning collaboration relationship, and skilled at supporting the student, this was not true of all organizations. Students with unsuccessful working life encounters often suffered from negative motivational and emotional consequences. Faculty rarely attended joint meetings with the student and the organization. Dysfunctional faculty and working life encounters also delayed starting the thesis process. Students were at times suspicious of the usefulness of thesis planning classes and peer advising, but mostly the support was appreciated and utilized effectively.

Recommendations for further research and implications for practice were built around a proposed quadripartite model of interaction. The motivation, competences and resourcing of, and the collaborative models between the four parties need further research and development. Student theses as RDI in collaboration with working life form a powerful dynamic and context for professional learning and development. To be effective, further work is needed.

Key words: bachelor thesis, undergraduate dissertation, university of applied sciences, commissioned thesis, research literacy, information literacy, research competences, RDI, tripartite collaboration

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LIST OF ABBREVIATIONS

ABR	Anything but research syndrome
ARENE	The Rectors' Conference of Finnish Universities of Applied Sciences (in Finnish *ammattikorkeakoulujen rehtorineuvosto*)
B2B	Business to business
B2C	Business to consumer
CAQDAS	Computer assisted/aided qualitative data analysis software
EHEA	European Higher Education Area
EQF	European qualifications framework
ETS	Educational Testing Service, a U.S.-based organization
EU	European Union
GT	Grounded theory method. Nota bene: The term ‘grounded theory’ is always spelled out in full when referring to a grounded theory instead of the method.
HE	Higher education
HEI	Higher education institution
ICT	Information and communications technology
IL	Information literacy
IT	Information technology
K-12	Education from kindergarten to highschool (term used in the United States)
MSW	Master of social work
NDA	Non-disclosure agreement
SEP	Science and engineering practices, a federal U.S. framework for K-12 education
NGSS	Next generation science standards, a federal U.S. standard for K-12 education
NQF	National qualifications framework
QDA	Qualitative data analysis method
R&D	Research and development
RDI	Research, development and innovation
RL	Research literacy
SME	Small and medium sized enterprises
TRN	Teaching-research nexus
UAS	University of applied sciences
UG	Undergraduate
UR, URE	Undergraduate research, undergraduate research experience
ZPD	Zone of proximal development

1 INTRODUCTION

The Finnish higher education (HE) sector consists of traditional research universities granting bachelor's, master's, licenciate's and doctoral degrees, and professionally oriented universities of applied sciences (UAS) granting bachelor's and master's degrees. The aim of this study is to contribute to UAS research, development and innovation (RDI) pedagogy and organizational UAS bachelor thesis process design by looking in more detail into a specific aspect of the UAS bachelor thesis process. The focus is on the thesis planning stage as experienced and expressed by business students. The study was implemented in a Finnish metropolitan region UAS. The title was inspired by the term "dissertation journey" in (Todd, Smith & Bannister 2006, 161) Heinze and Heinze (2009).

This introductory chapter has four functions that serve to give a firm grounding for the empirical part (chapters 2–5) in extant literature and debates. Firstly, the UAS bachelor thesis is placed into the context of HE statistics. Thereafter, the student's role as an RDI actor, and the nature of a dissertation or a thesis are discussed. These chapters three provide a basic introduction to the topic in the Finnish HE context. Secondly, the research objective at hand is located in the academic discussion through an in-depth literature review, and the need for the study discussed. Next, the research problem and the limitations of the study together with its benefits are presented. Lastly, the author's pre-understanding of the problem at hand is examined.

It should be noted that the terms thesis and dissertation are used interchangeably in this report. The common term in the Finnish UAS context is 'thesis', while many international institutions and authors appear to prefer the term 'dissertation'.

1.1 UAS statistics

In 2014, a total of 18 462 youth students and 4 091 adult students completed their bachelor's degrees in one of the 24 Finnish UASs (Vipunen – Opetushallinnon tilastopalvelu 2015a). In practice, this means that 22 553 thesis students were advised by hundreds of teachers and thesis advisors for a period of two months to more than a year. Additionally, students need the support of a capable library and ICT support staff. National HE and RDI policies direct toward collaboration

between HE and the economic machine. The ideal is that theses are commissioned by for-profit and non-profit working life organizations. According to the national statistics service for education maintained by the Ministry of Culture and Education and Finnish National Board of Education, the proportion of commissioned UAS bachelor theses varied between 41,3–100 % in the years 2010–2014 depending on the higher education institution (HEI) and the type of education (youth vs. adult) (Vipunen – Opetushallinnon tilastopalvelu 2015a). A total of 317 809 ECTS[1] were completed through commissioned theses (Vipunen – Opetushallinnon tilastopalvelu 2015b). UASs in the field of social sciences, business and administration, which are within the remit of this study, have varied between 75,6–82,6 % in commissioned theses during the same time period depending on the institution and type of education (youth vs. adult). Humanities and education has been the most successful field with a rising trend from 80,7–97,8 % in the same timeframe. (Vipunen – Opetushallinnon tilastopalvelu 2015a.)

Study time statistics show that, while the norm time to graduate with a UAS bachelor's diploma based on the curricular structure is an average of 3,5 years, even at its best only 23,6 % of social sciences, business and administration students have achieved this during 2002–2010 (Vipunen – Opetushallinnon tilastopalvelu 2015c). Markkula (2007) surveyed Finnish UAS students (n=3121) to establish reasons for delayed graduation. The most common reason was weak study motivation (27 %), followed by study arrangements (18 %) and too demanding studies (18 %). Interestingly, these problems were most typical for students in the later stages of their studies. Laitinen and Halonen (2007) studied an individual Finnish UAS. Their survey (n=279) indicated that the preparation of the thesis was experienced to be a stumbling block delaying graduation. A major review of research into students' study paths in Finnish secondary and tertiary education reduced the factors causing delays in and dropping out from studies into a single model. The model identifies three components: student specific individual factors, the transfer system and the societal context, and factors internal to education and the institution. (Kouvo, Stenström, Virolainen & Vuorinen-Lampila 2011, 75–78.) A confidential internal thesis feedback survey (n=783) in a capital region UAS in 2013–2014 sought students' opinions on the reasons for delays with the thesis project. The overwhelming majority listed one or more of the following reasons: lazyness, lack of motivation, personal life situation, working while studying, and problems with the commissioning company. Reviewing the results listed above, it becomes evident that at least some the factors delaying timely graduation in general, and in terms of the bachelor thesis, in specific,

[1] European credit transfer system, in which 1 ECTS corresponds to 26–27 hours of student work, including class hours and independent work.

can be facilitated by UAS through thesis process design and more responsible student guidance systems.

Viewed in the context of the above statistics, the goal of this study is to facilitate timely graduation by studying the experiences students have in the planning stage of the thesis, and, thereafter, by suggesting improvements to enhance student experience.

1.2 Bachelor thesis in the Finnish UAS

What is the Finnish UAS bachelor thesis then? This chapter is dedicated to the exploration of this question, which can be examined from several viewpoints.

Firstly, one set requirements and descriptions arises from national Finnish statutes and regulations. The objectives of bachelor-level UAS degree are that graduates have 1) wide ranging practical knowledge and skills at the basic level, and the theoretical fundamentals to function in an expert role in his field of specialization; 2) readiness to follow up and advance the development of his professional field of study; 3) ability for professional growth and lifelong learning; and 4) adequate communication and language skills to engage in international activities and collaboration in his field of study (translation by author based on the Decree on degrees in polytechnics 15.5.2003/352, 7 §). The now outdated decree on degrees in polytechnics (15.5.2003/352, 4 §, 7 §) enshrined the requirement for a UAS thesis at the bachelor-level as follows: the objective of "the thesis is to develop and indicate the student's ability to apply his knowledge and skills in an expert task related to his professional studies"[2] (translation by author). The role of the thesis is to prepare the student for the duties of a practicing expert[3] in the field of his professional specialization studies (Korkeakoulujen viitekehys –työryhmä4 2009, 26). The normative note in the law was, however, removed recently: the revised act (4.7.2013/546) states that the bachelor thesis is a component of the degree without further definitions. Other legislation defines theses and their assessments as public documents (Tietosuojavaltuutetun toimisto 2010). In recent years, UASs have actively moved away from paper-based publications stored in their campus libraries to utilize the public national Theseus thesis database (www.theseus.fi), and in many cases also in-house databases. When both are in use, the student commonly chooses whether he wishes to publish in the national open database or a database limited for viewing by HEI faculty, students and library visitors.

[2] In Finnish " Opinnäytetyön tavoitteena on kehittää ja osoittaa opiskelijan valmiuksia soveltaa tietojaan ja taitojaan ammattiopintoihin liittyvässä käytännön asiantuntijatehtävässä."
[3] In Finnish, käytännön asiantuntijatehtävä.
[4] In English,The higher education framework workgroup

Secondly, the question what the thesis is can be examined from the viewpoint of thesis related projects and recommendations. The national UAS thesis competition[5] was implemented annually for 20 years from 1992 to 2012. The competition aimed to develop the quality of UAS theses and to reinforce the development of a UAS thesis culture. During these years the thesis developed into a genre of practically oriented reseaerch and RDI reports. A more organized style and expression grew through a convergence of varied structures and contents integrating the theoretical and practical components. Also individual creative solutions in reporting were encouraged to develop a variety of options. Simultaneously, the contents became richer and more multidisciplinary. As an outcome of these developments the UAS thesis became more competitive, and now functions as a notable tool both in the students' professional development and in the collaboration of UASs and the working life. (Närhi & Ylipaavalniemi 2012.)

The national thesis development project (Opinnäytetöiden kehittämishanke 2006) also issued recommendations for general quality standards for Finnish UAS bachelor theses in 2009 for the first time in UAS history. These recommendations function as a benchmark against which all UASs can, and often do, measure their thesis processes and theses as a product of RDI activities. Among the many recommendations issued by the project are the following points. Ideally, the thesis has a scope of 15 ECTS. It should be commenced only after the student has completed an adequate number of professional and methods studies to have the competences required to complete a thesis project successfully. There can be one or more authors on the condition that the division of authorship is clearly indicated. (As an aside, I should point out that, in practice, the great majority of theses are done individually.) Additionally, a thesis can be done as a part of a larger RDI project, to which students, and possibly also staff, contribute to through their own projects. Theses commissioned by business, industry and non-profits of all kinds are common. The thesis topic must originate from the field of the student's professional studies. It should be practice-oriented, tightly connected to the working life, and provide immediate benefits through its results. The student should be issued written thesis instructions covering, among other things, writing, referencing, research ethics supervision practices, publication and assessment. Competent and committed supervision relationship aimed at facilitating the student's professional growth is also important. When the process starts, the student should be assigned a supervisor, after which they together agree on the supervision objectives, methods, work division and seminar practices. Additionally, a written supervision contract is recommended. The structure of the thesis report is flexible to facilitate structural solutions in the service of the report objective and content. The

[5] In Finnish, Thesis Ammattikorkeakoulujen valtakunnallinen opinnäytetyökilpailu

thesis report must, however, contain the following components: the knowledge base (theoretical framework) applied, argumentation for decisions made, summary of results, concrete action points or development proposals for the case company, and final self-reflection on learning. Finally, the assessment criteria and the assessment process should be clear to all parties from the beginning. (Opinnäytetöiden kehittämishanke 2006.) One achievement of the national thesis development project was to issue common terminology to relieve the confusion caused by the variance in institutional terminologies. The terms reveal much of the the UAS process: thesis, thesis candidate, thesis seminar, thesis plan, supervising teacher, writing advisor, knowledge base, working life supervisor, and peer assessor[6] (Opinnäytetöiden kehittämishanke 2006, 13).

Thirdly, the thesis can also be examined from the viewpoint of type of RDI it should be. NSB National Science Board (2010) and OECD (2005) define some key terms necessary for the discussion of what a Finnish UAS bachelor thesis is. These terms are applied research, basic research, development and innovation.

> *Applied research: Research aimed at gaining the knowledge or understanding to meet a specific, recognized need; in industry, applied research includes investigations to discover new scientific knowledge that has specific commercial objectives with respect to products, processes, or services.*
>
> *Basic research: Research aimed at gaining more comprehensive knowledge or understanding of the subject under study without specific applications in mind.*
>
> *Development: Systematic use of the knowledge or understanding gained from research directed toward the production of useful materials, devices, systems, or methods, including the design and development of prototypes and processes.*
> *(NSB National Science Board 2010a)*
>
> *"An innovation is the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organisational method in business practices, workplace organisation or external relations."*
> *(OECD 2005 para 146.)*

In terms of these definitions, the triple aims of the Finnish UAS bachelor thesis are to conduct applied research in the pursuit of development and innovation related to working life needs, to further student learning, and to provide a proof or a sample of student's learning achievements[7]. Theses can also be considered as windows through which the UAS opens up to the world. As one resource of the Finnish RDI system, student theses should be carefully managed and focused (Leinonen 2006, 109, 125).

[6] The Finnish original terms in the same sequence are are: opinnäytetyö, opinnäytetyön tekijä, opinnäytetyöseminaari, opinnäytetyösuunnitelma, ohjaava opettaja, tekstinohjaaja, tietoperusta, työelämäohjaaja, vertaisarvioija.
[7] This last point derives from the Finnish term "opin + näyte", which translates as "a sample/proof of learning".

Fourthly, the UAS thesis has also been examined from the viewpoint of thesis cultures and by exploring the difference in the thesis cultures of UASs and research universities. In the early days of UAS development, Stenvall (1999) investigated faculty's perceptions of the UAS bachelor thesis. At the time faculty opinions could be grouped under two types of thesis culture: a traditional academic thesis resembiling a typical university thesis, and a practical thesis that had started to emerge as a working life oriented thesis type specifically suited for UASs. More recently Heinonen (2006) investigated how UAS and university thesis advisors perceived the differences and similarities between the university and UAS thesis. The results indicated that UAS bachelor thesis shares some attributes with the typical university thesis: the applied and multidisciplinary nature, the goal of knowledge generation, topicality and the demand for the usability/utility of results. Attributes specific to UAS theses are: a narrow focus of one topic, focus on a specific professional or vocational field, worklife orientation and speedier completion and graduation time. While the university and UAS theses have slowly become more similar in terms of some attributes, there are still clear differences between the two dissertation types. (Heinonen 2006, 211, 234.) It has also been suggested that comparisons between the university and UAS thesis may not be fruitful, especially if the critierion in UAS becomes "different from university thesis" (Toljamo & Rissanen 2005).

Fifth, ideally, at the national policy level, theses are commissioned by working life organizations, and prepared to serve their needs. For the purposes of national UAS statistics, a thesis is commissioned if it fulfils one or more of the following three conditions: "Working life has contracted in writing before the commencement of the thesis process"

- *to pay the UAS or the student for the work.*
- *a working life representative to advise the thesis.*
- *to use the results in its activities.*

(Amkota-käsikirja 2005.)

In general, students have two main options when choosing a thesis topic. They can follow personal professiolnal interests, mostly by searching for a commissioning company but at times also by option for a desktop study, or join a research project coordinated by the UAS. Practices vary depending on the UAS and the discipline. For example, individual commissioned theses are common in business and ICT programs, while healthcare programs often offer larger research projects run by UASs in collaboration with local or national health care organizations. Students engaged in commissioned projects also need to prepare written commissioning contracts covering a multitude of legal issues, such as, payment of costs incurred during the project, and copyrights to the resulting products (Hakala 2004). Additionally, working life organizations often require the

student to sign a separate non-disclosure agreement (NDA) to secure company confidential information.

Sixth, the subtypes of UAS thesis have been discussed since the UAS thesis first came to existence in the late 1990s. Hakala (2004, 21) presents two main types of thesis: a research-oriented thesis and a development project oriented thesis. The former is typically a qualitative or quantitative research project, such as, a survey or interview study, an action research, a developmental work research project, or a service or marketing study. The latter can take many forms, such as, planning and/or implementing event, exhibition or a fair, setting up a marketing campaign, designing a computer program or a multimedia application, putting together a video, product development plan, business plan or business process development plan, producing a book, study material or a portfolio (Hakala 2004, 21–28; Ruotsalainen & Eriksson 2007, 134). A brief overview of UAS websites and Hyrkkänen's (2011, 14) report reveals that currently the UAS bachelor thesis takes three main forms: a traditional research report, a product, service or event development project, or a compilation/portfolio thesis consisting of student's previous writings and projects with additional in-depth reflection. The portfolio thesis is a recent addition; it was modelled after the article dissertation in use in research universities.

The research problems in research oriented theses and project objectives in product oriented theses represent applied research at its most basic and purest: the focus is on generating specific information, knowledge, processes, recommendations, products, events, and/or other indirect or direct benefits for the commissioning organizations. The thesis offers the students an opportunity to practice developing products, services, worklife processes and practices in collaboration with work life representatives (Hyrkkänen 2011, 14). The great majority UAS theses in my own organization represent practice-driven research: the research problem or project objective agreed with the commissioning organization directs the student to construct a knowledge base (theoretical framework). The knowledge base is then operationalized into a survey, an interview frame, a focus group discussion or a project process. In research oriented theses, the data is collected, analyzed and interpreted against the framework and the company's needs to produce recommendations for management action. In product oriented theses, the thesis project is planned, implemented and evaluated. The products (events or physical products) are designed utilizing the knowledge base and possibly also the results from a small scale research project embedded in the project. The completed event plan or physical product may also be tested, and even piloted or taken into full use.

Seventh, there have been efforts to define the ideal thesis. Hakala (2004, 29–37) describes the characteristics of an ideal thesis, stressing that a single thesis does not need to fulfil all of them to be good.

- *The topic is adequately justified, timely and important from the student's own perspective, and from the perspective of the case company.*
- *The demarkation is narrow and profound rather than wide and superficial.*
- *The topic and implementation are original and innovative.*
- *The project is practical and closely connected to working life, allows the candidate to show his expertise and ability for independent thought, and facilitates his professional growth.*
- *The thesis process and report advance systematically, are analytical and logical, and produce a useful outcome.*
- *Reporting shows the writer's information acquisition skills and critical use of sources.*
- *The author exhibits a reflective approach and is able to build arguments.*
- *Reporting is successfully done.* (Hakala 2004, 29–37.)

The guidelines given by Kananen (2010, 2012, 2013a, 2013b) to UAS thesis writers show much rigour in their strict reliance on the processual norms and reporting standards of the scientific method. Graciously, the national thesis competition's final report concluded that it is not necessary to develop an ideal UAS thesis nor to define the differences between university and UAS theses. A variety of theses can fill the function of the thesis, and the quality criteria should develop based on the changing needs of working life. (Närhi & Ylipaavalniemi 2012.)

Eighth, as defined from the UAS faculty and student viewpoint, the bachelor thesis is often the first large independent body of work conducted by the student (Mäenpää 2014, 60; Frilander-Paavilainen 2007, 114) and offers the student an opportunity to show what he is made of (Toljamo & Isohanni 2007, 298) more and more often through a unique creative process (Leinonen 2006, 125).

The last perspective used here to explore the UAS bachelor thesis is an international one. Relating the above descriptions of the Finnish UAS thesis to international terminology, the closest equivalent English term is "the professional thesis", which is a requirement in many bachelor's degrees in the United Kingdom. Rowley and Slack (2004, 177) see the undergraduate (UG) dissertation in all vocational disciplines such as business, management and information systems as

"an opportunity for students to demonstrate their learning skills that they should have acquired through out their study". "Dissertation is often the first chance an undergraduate has to produce a substantial, independently produced piece of study" (Rowley 2000, 14). A range of methodologies is encouraged to serve the needs of the project. The professional dissertation is defined as an empirically-based dissertation in the following manner:

> *[…] a small research project in which the student is encouraged to collect data from the "real world", to analyze them, and interpret them in a way that is informed by theory, but the dynamic between theory and practice is under continual evolution. In knowledge creation, theory is continually refined by the analysis of practice. Understanding of concepts is enhanced, relationships between variables are established, and models proposed and refined.*
>
> *In an undergraduate dissertation it is a little unrealistic to expect that knowledge creation that contributes to new theory will be a common occurrence. It is more likely that a student can be expected to use theory as a lense for better understanding of the practical situation under analycis. In this process, they should advance their understanding of the theory with its concepts and models, and the practice situation, this may promote their capacity to analyze evidence, in pursuit of evidence-based practice. Originality may rest in the student's application of theory in a unique and possibly topical context.*
>
> (Rowley & Slack 2004, 178.)

In the English speaking countries the undergraduate (honors) dissertation is generally viewed "a culmination of the undergraduate programme". The student works independently for a longer term than in normal course work, and eventually submits a more in-depth "extended piece of work". The process serves to promote autonomous learning and functions as an outstanding assessment tool. While there are differences in the dissertations between disciplines, departments and institutions, there are also some core similarities described in the quotation below. (Todd *et al.* 2004, 335; Todd *et al.* 2006, 161.)

> *While these projects may vary greatly in scope and nature, most share a number of key characteristics. First, the learner determines the focus a direction of the work. Second, this work is carried out on an individual basis – although usually with some tutors support and direction provided. Third, there is typically a substantial research componen to the project, requiring the collection of primary data and/or the analysis of existing secondary data. Finally, learners will have a more prolonged engagement with the chosen subject than is the case with 'standard' course work assignments such as essays or reports, with the work consequently expected to be more 'in depth'.* (Todd *et al.* 2004, 335.)

The nine perspectives to the bachelor thesis presented in this chapter combine to form a challenging description of what a UAS bachelor thesis is. It is easy to agree with them. Based on

15 years of experience working with UAS theses, I venture to claim that the main differences between a UAS thesis and a traditional research university thesis lie in the thesis background, literature review and conclusion chapters. In UAS thesis, the background chapter commonly focuses on the needs of a single case organization, as opposed to the need of a scientific community to research a specific phenomenon from multiple viewpoints. A typical UAS student also does not delve into prior research in the literature review chapter like the research university student, but rather focuses on concept definitions, theories and models necessary to attain the objectives agreed with the commissioning organization, or set for a desktop study. The conclusion chapters in UAS theses mostly contain recommendations directed to the case company's (immediate) action alongside with some suggestions for additional practical theses type projects. Research university theses, in comparison, conclude by suggesting further research topics in the area of the phenomenon, and, possibly, recommendations for the organization if an organization was in focus. The remaining thesis components are quite comparable with each other. It is specifically through these three differences that the added value of the UAS thesis becomes realized for the student and the case company. These differences result in the UAS theses' focus on bringing about immediate practical benefits and outcomes, while the research university thesis focuses on accumulating scientific knowledge study after study. Kananen's (2010) endorses the use of terms such as science, the scientific method, scientific knowledge and theory in relation to UAS theses. I agree with Kananen's premise: whether the UAS student is studying nursing, business or engineering, the thesis projects they engage in must produce scientifically viable and actionable information and usable products and/or processes. Such goals cannot be achieved without a solid scientific approach.

I present one proviso based on experience, however. The creation of new knowledge and innovations are commonly listed as hallmarks of quality RDI. UAS bachelor theses rarely meet this criterion, and, in my opinion, they do not necessarily even need to. Rather, as is often the case, the knowledge, processes and products are new and innovative in the context of the commissioning organization. This, specifically, is at the heart of a good UAS thesis: the practical development of working life and organizations.

After this introduction to UAS statistics, and an exploration of what a UAS bachelor thesis is, we move on to the question of the student's role in the national RDI system.

1.3 The student as an RDI actor in the UAS

Together with the more traditional research universities, UASs form the Finnish higher education system and a part of the Finnish innovation system. UASs have a legislated duty to educate professionals, and conduct research, development and innovation (RDI) that serve tuition, working life and regional development (Polytechnics Act 14.11.2014/932, 4 §). They have full freedom of tuition and research whilst engaged in these legislated duties (Polytechnics Act 14.11.2014/932, 9 §). Additionally, they have the duty to maintain a quality management system and monitor the quality of all their activities. The Finnish Education Evaluation Council oversees the quality of the education system by conducting national quality audits on Finnish HEIs. (Polytechnics Act 14.11.2014/932, 62 §). The official brief of UASs requires them to engage in RDI as part of the Finnish innovation system, to integrate RDI into their educational activities, and to support regional development through RDI, whilst also furthering national economic development and growth (Opetusministeriö 4.3.2004; Opetus- ja kulttuuriministeriö 15.12.2011).

The Rectors' Conference of Finnish Universities of Applied Sciences (ARENE 2007a, 6) defines the UASs as higher education institutions giving professional higher education as opposed to the scientific higher education offered by traditional universities. In line with this, ARENE (2007a, 4–5) promotes the idea that bachelor students are in the center of UAS RDI activities as producers of mode 2 knowledge in the service of working life, and stresses that this approach is well suited for the integration of education and RDI required by national RDI strategies of the UAS institution in Finland. ARENE (2012, 7–9) clearly considers student contributions an essential part of RDI, as students are mentioned in several of the recommendations ARENE has given for UAS RDI, and theses are specifically listed as public results of RDI activity.

The same approach is clearly visible in the Bachelor for the Labor Market (Balama) project, where the rectors' conferences of eight countries prepared descriptive country reports to form the basis for a comparative discussion. The report on Finland states that based on national strategies set by the Ministry of Education and Culture, R&D in UASs concentrates on applied research, whose results are applicable to working life, especially regional working life and the public sector, immediately or within a few years. The mission of the UASs is to educate "qualified professionals for current and future needs of working life and its development" (Country report in the framework of the Balama study. Finland. 2009, 13). Due to this R&D should be integrated with teaching and learning activities, and pedagogical solutions should facilitate smooth cooperation with worklife organizations. Specifically, "the most flexible way to meet the challenges and adjust to the changes of working life are the specialisation studies (30 credits), and the tailored education, research and

development services geared towards the working life" (Country report in the framework of the Balama study. Finland. 2009,13). The implementation of studies is achieved in close collaboration/together with working life organizations; especially in the form of internships, theses, and commissioned assignments and projects. R&D initiatives mainly come from working life and, thus, demand-driven applied research is the mode of operation. Additionally, students can participate in varous research projects. (Country report in the framework of the Balama study. Finland. 2009, 11-19.) The joint-UAS Tutka-project produced several examples of how to integrate Finnish UAS RDI activities and educational activities in order to develop UAS operations in this national key development area, which still is taking early steps. Experiences indicated that this integration helps UASs develop their own unique profiles as HEIs, makes UASs more visible on the market, increases the regional impact of UAS RDI activity, and helps create a new innovative teaching and learning culture. Consequently and crucially, the integration develops students' RDI abilities and competence for project work. And, when RDI activities are undertaken in authentic working life projects, learning outcomes are improved. (Toivola 2010, 4.) Similar results are evident in an international comparison by Koivula and colleagues (2009, 38–41), who state that in Finland at the bachelor's level research and development is mainly linked to practical training and thesis work, but development work is needed to integrate courses studies with research and development. In a Finnish Ministry of Education report, Rantanen (2004, 23) states that service, investigation and development tasks undertaken by UAS students are commonly seen to develop students working life competences and orient them to their professional field of expertise. In the same vein, in a recent national UAS project on competence based curricula, Vaasa UAS Education Director[8] Laakkonen (2012, 23) states: "Current curricula facilitate the implementation of both projects, and research and development projects". In the same project report, Turku UAS Education Director Kontio (2012, 37) reports on his institution's choice to utilize innovation pedagogy as a learning strategy. It builds on the interaction of learning, and the production and application of new information and knowledge. In practice, it is a working-life-based approach to learning that utilizes research and development competences.

Yet, when UAS students' position as official RDI actors in Finnish HE is examined in more detail using varied sources, it becomes apparent that their position can be precarious. I quote a few such reports here. Firstly, the national plan for education and research by the Ministry of Education and Culture mentions UAS bachelor theses only briefly by stating that "it is common to do theses that serve the working life" (Kulttuuri- ja opetusministeriö 15.12.2011, 17) without any further

[8] In Finnish *opetusjohtaja.*

definition of the relationship of UAS theses to the national innovation system. The tripartite agreements commonly used in UASs to contract the UAS, the working life organisation and the student in an RDI thesis project do not get a mention either.

Secondly, in the evaluation of Finnish UASs' RDI policies and activities conducted the behalf of Finnish Higher Education Evaluation Council, Maassen and colleagues (2012, 18) found that there there is no clear agreement on the definition of RDI in Finnish higher education in spite of a a number of official documents in use (e.g. Polytechnics Act, definition by Statistics Finland, ARENE's recommendations, and OECD's Frascate Manual). Hence, unsurprisingly, Maassen and colleagues (2012, 12) also conclude that there is a lack of an overall steering framework for the development of RDI activities, and, as a result, UASs have developed a variety of profiles of different scope and organization (for case examples of UAS practices, see Opetusministeriö 4.3.2004 and ARENE 2007a). The study also found much heterogeneity in who is understood to be the main RDI actor or actors. Some considered staff to be the main RDI operators, while others considered students to be at the core (Maassen et al. 2012, 28). Yet, student participation is central to almost all RDI projects (Maassen et al. 2012, 29) as UASs utilize RDI "as a pedagogical instrument for a practice oriented education" (Maassen et al. 2012, 31). And yet, disconcertingly, RDI directors' interviews revealed that only a small part of the student body takes part in RDI (Maassen et al. 2012, 34). The authors considered it a striking feature of Finnish UASs that there is an emphasis on involving Bachelor level students in RDI activities with the dual objective of developing their RDI competences and skills, and transferring knowledge to working life (Maassen et al. 2012, 32). The most popular way for students to participate in RDI is thesis work, while they also engage in a rich variety of RDI tasks as part of courses or work practice (Maassen et al. 32-33). Surprisingly, however, the study also found that many students engaged in RDI did not have the necessary RDI competences and skills to participate with full effect, partly at least due to the small number of course hours in RDI methods (Maassen et al. 2012, 33). Students were eager to have more formal education to develop their RDI competences (Maassen et al. 33). Considering the previous points, the report recommended that basic RDI competences and skills need to be incorporated into the bachelor curriculum (Maassen et al. 2012, 37). The report also pointed out the difficulties related to designing RDI indicators that would serve all UASs equally. In these indicators, indicator 5 "Number of credits gained by students in RDI activities", was positioned, not in RDI indicators, but educational indicators (Maassen et al. 2012, 54–55). This outstanding report by Maassen and colleagues is in my opinion highly recommendable reading for UAS management, and faculty involved in RDI projects and advising RDI theses: it is sadly full of contradictions that appear to prevent students from actualizing their roles as RDI actors.

As a third example I take here a report where student RDI appears to be treated in a disdainful manner. An evaluation project of RDI operations in UASs by Ahmaniemi (2011, 9) report recommends that the indicator for student RDI (calculated as the number of ECTS completed in RDI projects divided by students present) be moved from RDI indicators to educational indicators. This change in the indicator's category would, strangely enough, appear to contravene ARENE's recommendations discussed above. Lastly, Hyrkkänen's (2007, 63, 65) doctoral dissertation study of the social and healthcare services department of one Finnish UAS revealed degree program directors held two conflicting conceptions of the nature of RDI: some considered the bachelor thesis to be one expression of RDI, while others did not include theses under the concept of RDI at all. As the final outcome of the study, the staff developed a novel concept of UAS RDI starting from the bachelor thesis.

Interestingly, an examination of published guidebooks for UAS thesis candidates reveals likewise a duality of views on whether student RDI is real RDI. I include here just two examples of the many reports available. On the one hand, Hakala (2004) writes from the premise that UAS bachelor thesis is not research, but rather an exercise in research-type work. On the other hand, Kananen (2010) instructs the reader that science is not something mystical. He guides the thesis candidate to do scientific research by presenting the tools and thinking patterns of scientists.

The brief discussion above serves to show the precarious position of UAS students' in the field of UAS RDI can be: students appear to be part of it and yet, somehow, not after all. This study takes the viewpoint in line with much UAS literature that students are indeed an active RDI actor, and the bachelor thesis is one form of UAS RDI (Kautonen, 2003, 19–22; Koivunen, Remahl & Isohanni 2011; Leinonen 2001, 193; Siitonen & Hyrkkänen 2011, 98; Toljamo & Isohanni 2007, 298). The worklife collaboration aspect can vary from the student receiving a thesis topic from a work organization to the student actively working as a member of a larger UAS RDI project (Ammattikorkeakoululakiryhmän muistio 2002, 16). Additionally, RDI in UAS is here defined accordance with both the Ministry of Education as well as Maassen and colleagues, who call for continued work on the conceptualization of what RDI is in UASs. (For an interesting discussion on the meaning of UAS RDI, see Opetusministeriö 4.3.2004, 31–33.)

> *The objective of UAS RDI is to create new or improved products, production tools or methods and services. RDI often starts from the practical questions that working life has. (Opetusministeriö 4.3.2004, 33, translation by author.)*

> *[…] the set of activities that is expected to form a bridge between academic, 'curiosity driven' basic research and practical applications in society. In general, a central role in this bridging function has to be undertaken by UAS students and*

> *staff with effective connections to academic research as well as to the stakeholders from the provate sector and public organizations.*
>
> *(Maassen et al. 2012, 18.)*

Working life related student RDI pursuing the dual goals of learning and organizational development is an integral part of he UAS learning process. This viewpoint concurs with Badke's (2012, 9) argumentation that it is an unfortunate distinction to claim that "student research" is inferior or even an oxymoron when compared to "genuine research" conducted by staff, professors and researchers. Badke (2012, 9) concludes aptly:

> *"To dismiss student research as not meeting the criteria of real research is to doom students never to learn how to become researchers. Such a gap becomes --- detrimental to their education and future careers."*

Commissioned and non-commissioned RDI theses offer worthwhile and rich professional development and networking opportunities for the student. Competences in RDI are a crucial component of the UAS bachelor curriculum if the student is to reach the level of professional competence set in the Decree on degrees in polytechnics (15.5.2003/352, 7 §) discussed in the previous chapter. Today's and tomorrow's expert needs the competences to commission and interprete the results of RDI reports and projects as part of daily work in many professions.

1.4 Literature review

This chapter introduces the theoretical concepts and the prior research relevant to the study at hand. The chapter starts with a metadiscussion on the role of the literature review in the GT methodology. The use of literature in this study is reflected upon. Thereafter follows the literature review itself focusing on the concepts of research, science and information literacy, research, development and innovation (RDI) competences and research pedagogy. Lastly, prior research on the effectiveness of various research teaching and learning methods, and UG students' as well as faculty's experiences of UG research modules and UG dissertations are reviewed.

1.4.1 The role of a literature review in a GT study

Every research is carried out within a contextual framework, which contains conceptual, valuational and practical (operational) aspects (Kline & Clark 2000). Out of these three the role of

the conceptual or theoretical framework has been much debated in grounded theory (GT[9]) methodology literature. Since the literature review is an essential feature of academic dissertations, I consider it essential that researchers engaging in GT research carefully consider and clearly express their choices regarding the use of prior research, concepts, theories and models.

In the original form of GT, the use of prior terms, concepts and theoretical frameworks is not acceptable. Glaser and Strauss (1967, 33) warn against "a preconceived theory that dictates prior to the research "relevancies" in concepts and hypotheses". Instead they stress that a substantive theory should first be generated from the data, and only thereafter should existing formal theories be used to find out whether they can further the formulation of the emerging theory. This ensures that the data is not forced into pre-existing conceptualizations, and that concepts and hypothesis that emerge from the data are not ignored. (Glaser & Strauss 1967, 34.) Glaser continues to hold a firm opinion against the forcing of data in his later writings on the GT methodology (Glaser 1978, 1992 and 2001). Corbin and Strauss (2008) also prefer to start the research without "a predefined theoretical framework or set of concepts". Likewise, they acknowledge the usefulness of theoretical frameworks if the researcher, after data analysis, finds an existing framework that is closely aligned to the emerging grounded theory. In these cases, the theory can be used to "complement, extend, and verify the findings". (Corbin & Strauss 2008, 39)

Later GT theorists have taken a different perspective. Birks and Mills (2011, 22–24) argue that "a limited and purposive preliminary review" of literature can be helpful in the early stages especially by enhancing the researcher's theoretical sensitivity. They agree with Urquhart that knowledge of the extent of current knowledge and research in the area of study helps orientate the research without necessarily prejudicing the researcher towards existing conceptual frameworks (Birks & Mills 2011, 22, referring to Urquhart 2007). Charmaz (2006, 10) also claims that researchers construct grounded theories through "past and present involvements and interactions with people, perspectives and research practices". The researcher is not and cannot be a *tabula rasa*.

Ritva Koskennurmi-Sivonen (2007) warns master's thesis writers of the difficulties facing those choosing GT as their methodological approach. She suggests that to fulfill the academic requirements of a thesis, it is advisable to: show the need for a data driven approach by reviewing prior literature to highlight the dearth of prior studies in the field; and discuss the results generated through the GT approach in relation to prior research results.

[9] Hereafter the abbreviation GT is used to refer to grounded theory as a method or research design as is common in literature. The term grounded theory is used to refer to theories generated through the GT method, that is, grounded theories as research outcomes.

In recognition of the above debate and advice, the literature review below aims to strike a functional balance between the traditional GT warnings against the forcing of data, the more recent views that no researcher is a *tabula rasa*, and Koskennurmi-Sivonen's exhortations to master's thesis candidates to meet academic requirements. The literature review was completed in three stages. In the first stage, prior research was located and abstracts reviewed to establish whether the area of interest had been studied previously, what related areas had been researched, and what methods had been used. This preliminary review indicated that the area of interest had not been covered previously, although adjacent and related areas had been covered extensively. Additionally only one related study utilized GT as the methodological approach. In the second stage, data was continuously collected and analysed, and eventually integrated into a substantive theory. In the third stage, a more in-depth reading of suitable literature was undertaken for the dual purposes of scaling up the substantive grounded theory, and placing the findings in the context of existing research. The literature review was finalized before writing the final two chapters, discussion (chapter 4) and conclusions (chapter 5).

This arrangement allowed me to produce a master's thesis following the IMRD structure so typical in academic dissertations, even though the method used was GT, which does not encourage the use of the IMRD structure in its quest for data and analysis first, and theory thereafter. I believe this order of reporting makes the reading experience more meaningful to the reader.

In accordance with Ridley (2012, 24), the literature review below aims: to offer the historical backdrop of and the current context to the study at hand; to present relevant concepts and theories; and, based on those, indicate how the study at hand extends current research in the field as well as aims to tackle practical problems in the field of research pedagogy. Kline and Clark (2000) state that a successful literature review should describe, critique and relate the prior studies and theoretical writings to the research topic at hand. As a result, the research gap, and the practical and theoretical significance of the study should become evident. No formal presentation of a critical strength-weakness analysis (Kline & Clark 2000) is presented, but summaries and conclusions on the review are drawn in chapters 1.4.10–1.4.12 to pinpoint the substantive and methodological research gap extant in the literature. Kline and Clark (2000) stress that selectivity based on relevancy and salience as opposed to comprehensiveness is a key aspect of an adequate literature review. The criteria for relevancy and salience in this review pertained to whether the research report reviewed could shed light on effective methods of research tuition and learning, or student experiences of research modules, UG research experiences or UG dissertations. The objective was, against Kline and Clark's (2000) advice to reach a good level of comprehensiveness

in order to truly appreciate the prior research and understand where the current study can be located within it.

In what follows, I have boldened terms defined or used for the first time, so that the reader can glean the terminology at a glance.

1.4.2 Research, science and information literacy competences

It is befitting to start the literature review with the competences students need to engage in a dissertation or thesis process meaningfully and successfully. What are the competences required? And why are they necessary, or are they? The development of literacy skills in, for example, social science research students has been found crucial to facilitate timely completion of theses and publications (Ross, Burgin, Aitchison & Catterall 2011, 14). There is a variety concepts to describe the knowledge, skills and competences needed to engage in RDI. This chapter reviews terms, such as, research skills, research literacy, information literacy (IL), research ability or capacity, scientific literacy, and research and evaluation skills from an international and multidisciplinary viewpoint. These terms overlap to a great deal. Currently, it appears that research literacy and, especially, information literacy are becoming firmly established as the key terms. Literature defines both concepts, and offers descriptions of the competences capable individuals possess.

Cuthbert, Arunachalam and Licina (2012, 140) define the term **research literacy** (RL) as an "understanding what research is, what it can achieve and the difference it can make". They stress its relevance in the academic community as well as in government, industry and the wider community. Research literacy can also be defined as “understanding research language and its application to practice” and **research capacity** as “the ability to design and conduct research studies” (Williams, Mulkins, Verhoef, Monkman & Findlay 2002, 14). A **research literate individual** ‘gets’ research, understands “why it is important and what might be learnt from it, and” maintains “a sense of critical appreciation and healthy scepticism throughout” (BERA British Educational Research Association 2014, 40).

American Library Association Information (ALA 2000, 2, partly quoting ALA 1989) defines **information literacy** as “a set of abilities requiring individuals to recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information”. Badke (2012, 11) defines the **information literate person** in many ways, of which one states:”the information literate person --- can harness information in order to grow and learn”.

What is striking in these definitions of RL and IL is that there appears to be a three level hierarchy of literacy. Cuthbert and colleagues (2012) and Williams and colleagues (2002) define

the research literacy at a more superficial and passive level of *understanding* only. Williams and colleagues (2002) include the the active ability to *conduct* research and *apply* it to (that is, to *consume* it in) practice by introducing the term research ability. ALAs (2000) definition of IL also includes active aspects of *locating, evaluating and using.* Badke (2012) in his definition of IL adds the more general humanistic aspect of using information *to grow and learn,* in pursuit of what one can interpret to be self-realization. Bloom's (1956) taxonomy of educational goals springs to mind looking at this sequence of verbs. Although fascinating, the differences in the way the definitions are conceptualized can be somewhat confusing to a reader. I wanted to point this out to the reader to help him take note of and appreciate the active aspects in the definitions later on in this chapter.

ALA (2000) considers **information literacy competences** a foundational lifelong learning skill for everyone, and definitely for HE graduates in a world of rapid technological change, increasing complexity and proliferating information resources – a world where these competences are a prerequisite for success in academic study, working life and personal lives. ALA (2000, 3) highlights that, while these competences partly overlap with information technology (IT) skills, they area a much broader, yet distinct, competence area. ALA (2000) lists the compentencies of an **information literate person** as follows:

> - *Access the needed information effectively and efficiently.*
> - *Evaluate information and its sources critically.*
> - *Incorporate selected information into one's knowledge base.*
> - *Use information effectively to accomplish a specific purpose.*
> - *Understand the economic, legal, and social issues surrounding the use of information, and access and use information ethically and legally.*
>
> (ALA 2000, 2–3. For a detailed description of the standard, see ALA 2000, 8–14.)

In his passionate book on the need to teach IL skills, which he equates with **research skills or research processes,** Badke (2012, 24), quoting dozens of studies, simultaneously both defines IL and IL competences, and deplores the shortage of and gaps in research skills education in HE institutions in the United States.

> *This book will contend that a student who does not know how to do research – identify a problem, determine the information needed to solve that problem, acquire that information skillfully, sift through and evaluate what has been found, then use that information critically to address the problem – is indeed not an educated person.*
>
> *The irony is that today's higher education does everything but engage with this foundational skil and understanding gap. --- we do not help them learn how to*

> *handle information and genuinely engage in research --- and students do not learn how to do research unless they are taught.* (Badke 2012, xii-xiii.)

In the United States, a national (federal-level) definition of **scientific literacy** for kindergarten to highschool education (K-12) presents richly multiple aspects of the concept. Scientific literacy

> – *is the knowledge and understanding of scientific concepts and processes required for personal decision making, participation in civic and cultural affairs, and economic productivity.*
>
> – *means that a person can ask, find, or determine answers to questions derived from curiosity about everyday experiences. --- has the ability to describe, explain, and predict natural phenomena. -- being able to read with understanding articles about science in the popular press and to engage in social conversation about the validity of the conclusions. --- can identify scientific issues underlying national and local decisions and express positions that are scientifically and technologically informed.*
>
> – *has different degrees and forms; it expands and deepens over a lifetime, not just during the years in school. But the attitudes and values established toward science in the early years will shape a person's development of scientific literacy as an adult.*
>
> (National Committee on Science Education Standards and Assessment, National Research Council 1996, 22.)

Additionally a **scientifically literate citizen**

> *should be able to evaluate the quality of scientific information on the basis of its source and the methods used to generate it. --- to pose and evaluate arguments based on evidence and to apply conclusions from such arguments appropriately.*
>
> *Individuals will display their scientific literacy in different ways, such as appropriately using technical terms, or applying scientific concepts and processes.*
>
> (National Committee on Science Education Standards and Assessment, National Research Council 1996, 22.)

A large-scale study by Katz (2007), a senior research scientist for the U.S.-based Educational Testing Service (ETS), illustrates deplorably well Badke's point about the deficient state of IL and RL education in U.S. HEIs. Katz reported on a sample of 6300 college students and high school seniors, who took the computerized ETS information and communications technology literacy test (ICT literacy assessment). The skills areas in the test were modified from ALA's IL competency standards for HE. There were seven skills: defining, accessing, managing, evaluating, integrating, creating and communicating information. On the average, students scored only about half of the

maximum points, indicating that their skills were not adequate to complete college assignments efficiently. Interestingly, in a question requiring the students to select a research statement for a class assignment, 44% identified the right statement, 48% chose too broad a statement, and 8% chose incorrect statements.

The above listed competences are not enough, however. Garner and Seacombe (2009) highlight the importance of developing and maintaining social relationships as part of the social sciences research process: management of social relations influence the conduct of a research project, the quality of data collected, and, also, bear on whether the research is conducted in an ethical and humane manner. As a result, they consider **social relations competence** essential for researchers. An informal survey of c. 24 Masters programs in the UK by the authors revealed that none of the programs included social relations as a competency component. An analysis of the sample revealed, however, the following essential research skills in social sciences:

- *read, synthesize and evaluate the research literature,*
- *formulate a research questions and, where relevant, associated hypotheses,*
- *decide what data are relevant to answering the research question,*
- *identify a study population from whom data can be gathereed,*
- *select one or more appropriate methods for data gathering,*
- *apply the method(s),*
- *systematize findings,*
- *analyse and draw relevant conclusions from the findings.*

(Garner & Seacombe 2009, 81–82.)

Additionally ethics, an aspect of social relations, is often included in research courses. Garner and Seacombe tested Fiske's (1992, quoted in Garner & Seacombe 2009, 83–84) model of social relations in research as part of a project to develop a practice-oriented research methods course. Fiske's model consists of four relationship types that are formed by two intersecting either/or categorical dimensions: equality–inequality and independence–interdependence. Garner and Seacombe (2009) modified the model by treating these dimensions as parameters (points along a continuum). Students' evaluation of the course showed that "approaching research as a form of systematized professional human relationship was generally perceived as stimulating and enlightening" and the model helped students focus on relations as part of the research process (Garner & Seacombe 2009, 88). McAucliffe (2009) also considers the ethical dimension an integral and foundational part of every stage of a research process. She propones the teaching of applied ethics to all HE students, whether they upon graduation engage in industry-based or academic research.

Another, what I would call a metacompetence, is presented by Earley (2009). He advances the notion of **a reflective researcher**, who practices both reflection-in-action (while engaged in research activities) and reflection-on-action (looking back on actions taken) during the research process. This facilitates active decision-making during the research process, and learning throughout research projects.

An interesting example of a national approach to what these competences are, and what their importance from early education onwards can be is found in the United States, where experts, scientists, science education researchers and Nobel laureates from 26 states modelled from the work of scientists and engineers a set of next generation science standards (NGSS) for K-12 education. The Committee on a Conceptual Framework for New K-12 Science Education Standards (2012, 44–45) conceived of scientists' and engineers' work as belonging to three spheres of activity (FIGURE 1). The activity on left represents investigation and empirical inquiry. This sphere includes, among other things, decisions about what to measure, observation of phenomena, design of experiments, decisions on data collection methods, design of instruments and actual fieldwork. The activity on the right represents the development of explanations and solutions. This sphere includes, for example, extending a theory to create new models and hypotheses, and developing new designs, structures, physical models and simulations. Lastly, the activity in the middle represents evaluation through an iterative process through analysis, critical thinking, debate, argumentation, evaluation and critique. These typically result in more experiments and changes in hypotheses on the left-hand side of the figure, on the one hand, and further development of models already made, on the right hand side of the figure, on the other. The eventual goal is to refine and and improve the explanations and designs.

The K-12 NGSS competences that arose from the committees's analysis are:

1. *Asking questions (for science) and defining problems (for engineering)*
2. *Developing and using models*
3. *Planning and carrying out investigations*
4. *Analyzing and interpreting data*
5. *Using mathematics and computational thinking*
6. *Constructing explanations (for science) and designing solutions (for engineering)*
7. *Engaging in argument from evidence*
8. *Obtaining, evaluating, and communicating information.*

(The Committee on a Conceptual framework for New K-12 Science Education Standards 2012, 42; NGSS Lead States 2013, xx & appendix F.)

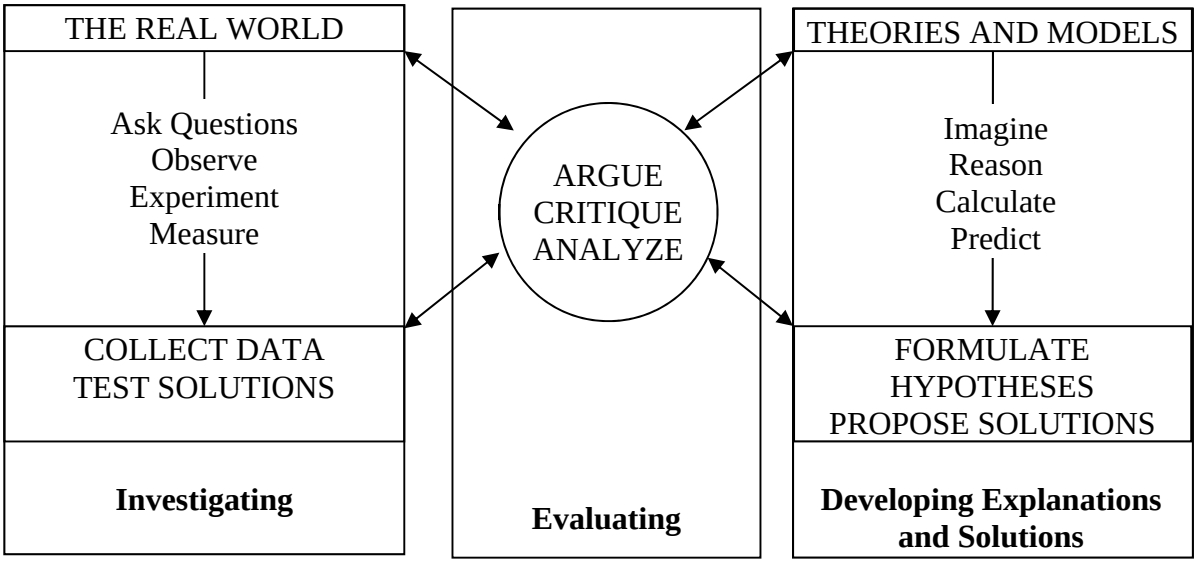

FIGURE 1. The three spheres of activity for scientists and engineers (The Committee on a Conceptual framework for New K-12 Science Education Standards 2012, 45.)

The reasoning for the need to teach these skills throughout K-12 education included several considerations with the main focus on developing students' knowledge of and competence in scientific endeavour. Students need to understand how scientific knowledge is developed, and how scientists and engineers therefore work. They need to understand the links between science and engineering. Such understanding can also motivate students to continue their own studies. (The Committee on a Conceptual framework for New K-12 Science Education Standards 2012, 41-43.) Another crucial reasoning for need of blended research and media skills is to ensure that students are "ready for college, workforce training, and life in a technological society". The skills they need are "the ability to gather, comprehend, evaluate, synthesize, and summarize information and ideas, to conduct original research to answer questions or solve problems, and to analyze and create a high volume and extensive range of print and nonprint texts in media forms old and new". The department highlights the need to embed throughout the curriculum the abilities to "conduct research and to produce and consume media". (The California Department of Education 2013, 3.)

Against this background Badke's (2008) reasoning for the necessity of research skills or IL education is well founded**.** They are "crucial to a full education" and necessary "to enable lifelong learning" as "research is a part of many careers". Therefore, it makes sense that IL "is a credible academic subject". As it is, HEIs "are paying a fortune for resources not being used to advantage" (such as article databases) and "our complex information environment provides significant material for credit instruction". One should also bear in mind that "the tools of research are complex" and simplifying the tools "for a lower level of learning is not working", and, as it is

"students are not learning good research skills with existing methods". And, pedagogically it is important to remember that "to learn research you must do research in a training mode". I hope that Badke (2008, 47–49) allows this rearranging of his article's chapter headings, so that I can present the driving logic behind his claims as I understand it. Badke (2012, 46–48) deplores the current "information illiteracy in academia". His analysis of the sources of this problem is comprehensive and merciless, but to the point.

> *The teaching of research processes has not been given priority in academic institutions. Reasons for this include a misunderstanding among both students and professors of the learning task demanded; a lack of support from academic administrators; the fact that the major literature on research processes instruction resides in the library literature rather than in the higher education literature; false notions that students learn research processes on their own and that the new technologies make students more able to accomplish good research; faculty culture that puts more stress on content than process; a lack of regard in academia for the contribution that academic librarians can make; and a lack of clear direction from agencies that set educational standards. In essence, the teaching of research processes is not a priority because so few people recognize that there is a problem to address.* (Badke 2012, 49.)

Surprisingly**,** Finnish education experts neither in the Research and Innovation Council under the aegis of the Ministry of Education and Culture (Borsos 4 Nov 2014, email) nor the Finnish Education Evaluation Council (FINEEC) (Kajaste 30 Dec 2014, email) were able to discuss the information literacy or research competences at the national level. A more detailed look into the national generic and substance-specific competences of Finnish UAS graduates yielded several interesting points and is discussed in the following chapter.

Based on the above discussion we can now answer the questions posited in the beginning of the chapter. Yes, research or research competences or IL competences are necessary for the highly educated whether they are researching academicians or practicing professionals. The competences are needed in the conduct of everyday work activities and decision-making. Research competences must be taught in Finnish UASs, at the very minimum, to enable graduates to consume research in an informed manner, and, often also to conduct small-scale RDI projects in their daily work.

1.4.3 The UAS bachelor's degree as qualifications and research competences in Finland

The European Qualifications Framework (EQF) was produced in collaboration by the country representatives of the European Union (EU) to harmonise educational qualifications in the European Higher Education area (EHEA). The EQF consists of eight levels ranging from the most

basic education (level 1) to the most advanced university degrees (level 8). Three descriptors indicate the learning outcomes at each level in the form of knowledge (theoretical and/or factual), skills (cognitive involving logical, intuitive and creative thinking; practical involving manual dexterity and the use of methods, materials, tools and instruments) and competences (responsibility and autonomy). Each "cycle descriptor offers a generic statement of typical expectations of achievements and abilities associated with qualifications that represent the end of that cycle". The first cycle HE degree (bachelor's degree) is placed at level 6, second cycle degree (master's degree) at level 7, and third cycle degree (doctoral degree) at level 8. (European commission 2014.) The learning outcomes of both the university and the UAS first cycle bachelor's degree are described as follows using the three descriptors.[10]

> *Knowledge: Advanced knowledge of a field of work or study, involving a critical understanding of theories and principles.*
>
> *Skills: Advanced skills, demonstrating mastery and innovation, required to solve complex and unpredictable problems in a specialised field of work or study.*
>
> *Competence: Manage complex technical or professional activities or projects, taking responsibility for decision-making in unpredictable work or study contexts; take responsibility for managing professional development of individuals and groups.* (European commission 2014.)

The committee for the preparation of the **Finnish national qualifications framework** (NQF) (2009) converted Finnish HE qualifications into the format required by the EQF. The objective was to "describe Finnish qualifications and the specific competences of graduates with higher education degrees in a coherent, understandable and comparable manner, while simultaneously harmonising the terminology used" (The committee for the preparation of the national qualifications framework 2009, 40). Among the indirect benefits of the application of the NQF, the committee listed as most important:

[10] In ARENE's (2007, Appendix 1) documentation these are defined in alignment with these as follows:

> *1 Knowledge means the outcome of the assimilation of information through learning. Knowledge is the body of facts, principles, theories and practises that is related to a field of study or work. In the EQF, knowledge is described as theoretical and/or factual.*
> *2 Skills mean the ability to apply knowledge and use know-how to complete tasks and solve problems. In the EQF, skills are described as cognitive (use of logical, intuitive and creative thinking) and practical (involving manual dexterity and the use of methods, materials, tools and instruments).*
> *3 Competence means the proven ability to use knowledge, skills and personal, social and/or methodological abilities, in work or study situations and in professional and/or personal development. In the EQF, competence is described in terms of responsibility and autonomy.*

> *an increasing focus on competence and learning outcomes, more attention is being paid to the quality of qualifications, working life requirements are being given greater consideration in the development of qualifications requirements, and the coherence of concepts used in qualifications and when describing them is increasing.* (The committee for the preparation of the national qualifications framework 2009, 49.)

Both university and UAS bachelor's level qualifications were placed on level 6 as first cycle degrees and described as follows[11].

> *"Knowledge: Possesses comprehensive and advanced knowledge of his/her field, including the critical understanding of theories, key concepts, methods and principles. Understands the extent and borders of professional duties and/or disciplines.*
>
> *Work method and application (skills): Possesses advanced skills, demonstrating mastery of the issues, the capability to apply knowledge and creative solutions, which are required in a specialised professional, scientific or artistic field to solve complex or unpredictable problems.*
>
> *Responsibility, management and entrepreneurship: Possesses the capability to manage complex professional activities or projects and the capability to work independently in expert duties in the field. Possesses the capability to make decisions in unpredictable operating environment. Basic capability to work as an independent entrepreneour in the field*
>
> *Evaluation: In addition to the evaluation and development of his/her own competence, is able to take responsibility for the development of individuals and groups.*
>
> *Key skills for lifelong learning: Possesses the capability for continuous learning. Knows how to communicate adequately verbally and in writing both to audiences in the field and outside it. Possesses the capability to communicate at an international level and interact in one official language and at least one foreign language.*
>
> (The committee for the preparation of the national qualifications framework 2009, 99-100; Hallituksen esitys Eduskunnalle laiksi tutkintojen ja muun osaamisen viitekehyksestä 2010, 31–32 contains the same in Finnish.)

From the above, it becomes evident that in both EU and Finnish documentation the university and UAS bachelor's degrees are placed on the same level with quite demanding competence descriptors for knowledge, skills and competences. From the viewpoint of the UAS bachelor

[11] An alternative formulation of these competences can be found in an earlier paper (Korkeakoulujen viitekehys – työryhmä 2005, 28) prepared before the final version of the NQF was presented in 2009. It is included in attachment 1 (in Finnish only).

thesis, attention is drawn to the many phrases that indicate knowledge, skills and competences required in RDI projects. Hence, undergraduates' competences to engage in RDI must be developed during the studies in a focused and effective manner.

The competences **UAS bachelor's graduates** should develop were defined as part of the Finnish Universities of Applied Sciences in the European Higher Education Area project (The ECTS project) implemented by the Rectors' Conference of Finnish Universities of Applied Sciences (ARENE 2007b). The key principles focused around educational quality and quality assurance, and the harmonization and transparency of educational study credits, outcomes and degrees within EHEA. The approach chosen in EHEA was a learner-centric competence based curriculum outlined by learning outcomes or core competences that run consistently throughout the degree program or a specific part of it. The focus was on interconnected units forming "a continuum that smoothly flows from one year to another". In EHEA, the core competences at the generic and subject-specific or professional levels were developed at the European, national, degree program, study year and study unit levels using a a tabularized matrix and utilizing the reference levels of the EQF for lifelong learning. In Finland, the Ministry of Education made additional determinations for competence descriptors based on national policies. The need for the core competences to align with working life requirements, and the learning to consist of working life oriented units was emphatically highlighted. Also "the learning processes and the stages of professional growth" were to be clearly defined in each program. (ARENE 2007b, 23–24, 27–30).

ARENE defined competence profiles as "complex systems of abilities and capacities which enable us to meet the challenges and requirements of different domains of life" (ARENE 2007b, 31). Six **generic competences** to be mastered by all UAS bachelor's graduates were defined through a collaborative process within Finland: learning competence, ethical competence, communicative and social competence, development competence, organisational and societal competence, and internationalisation competence. The three central RDI competences that arise from the list are: ability to conduct small-scale research and development projects; retrieval, analysis and critical evaluation of information; and ICT competences. (ARENE 2007b, appendix 4.) Later on ARENE continued to refine the generic competences, resulting in the following:

- *Learning competence*
- *Ethical competence*
- *Working community competence*
- *Innovation competence*
- *Internationalization competence*

(Auvinen, Heikkilä, Ilola, Kallioinen, Luopajärvi, Raij & Roslöf 2010, 9–10.)

Innovation competence contains abilities "to conduct research, development and innovation projects applying the existing knowledge and methods of the field", "to work in projects", to engage in "creative problem solving and development of working methods", and to "find customer-oriented, sustainable and profitable solutions". A more detailed look into the above list shows that many of the remaining competences also contain RDI competences albeit indirectly, because they are needed as part of the RDI process.

- Learning competence: *"is able to retrieve and analyze information"*
- Ethical competence: *"is able to work according to the ethical principles of the subject field" and "is able to apply the principles of sustainable development"*
- Working community competence: *"is capable of decision making in unpredicted situations"*
- Internationalization competence*: "possesses communicative competence necessary for one's work and for professional development in the subject field".* (Auvinen, Heikkilä, Ilola, Kallioinen, Luopajärvi, Raij & Roslöf 2010, 9–10.)

Truly developing these competences requires a planned step-by-step approach to building students' knowledge and skills from one curricular year to the next.

Subject specific competences were defined in program-specific groups at the degree program level (ARENE 2007b, 31). A recommendation (Country report in the framework of the Balama study. Finland. 2009, appendix 3) on **subject specific competences in business curricula** contained five competence areas (Attachment 2 contains the full competence table). Out of these five two patently focus on RDI competences as core competences for UAS business graduates.

Methodological business competence (support):
- *masters the basics of research and development required by the process of adopting deep business competence.*
- *is able to apply commercial mathematics and statistical methods, masters the required data systems.*
- *is able to apply both quantitative and qualitative research methods.*

Applied business competence (transferable skills modules)
- *is able to apply theories of business economics and masters creative problem solving in, for example, internsyip, project studies and thesis.*
- *is able to apply the most recent research data on business economics in his/her work.*
- *is able to develop business processes and apply quality thinking.*

(Converted to text from tabular format based on Country report in the framework of the Balama study. Finland. 2009, appendix 3.)

The national project to develop bachelor theses in UASs (Opinnäytetöiden kehittämishanke 2006) states that UAS students are expected to have developed the readiness and knowledge needed to conduct the thesis during the preceding study years in the program. Such knowledge and skills

include professional knowledge base, information acquisition and handling skills, methodological knowledge, work experience, information literacy and ability to apply information, ability to work independently and as a team member. Additional methodological competences relevant to the project can be developed to serve the completion of the project. (Opinnäytetöiden kehittämishanke 2006.)

To sum up, viewed from the perspective of the EQF and its Finnish modification NQF, the generic and subject specific competences agreed for Finnish UAS's bachelor of business curricula, the thesis is one component in the studies that facilitates the learning of all research or, more widely, RDI competences. The bachelor thesis as a curricular component has been considered an extremely efficient tool for professional growth, a bridge between education and working life, and a calling card to show to future employers (Hakala 1998, 2004). Working on the thesis is a form of learning that develops the students' competencies in:

- *information search in alignment with a specific problem,*
- *source criticism and self-criticism,*
- *problem solving, reasoning and argumentation,*
- *goal-oriented planning and timetabling of one's own work,*
- *processual working and*
- *assessment of one's work and work practices.*

(Hakala 1998, 8.)

The conclusion to draw from the above is that RDI competences are of central importance to develop in UAS bachelor's degree business graduates. Yet, there is no single framework describing the concept and content of RDI competences. Defining an RDI competence framework would help educators develop these competences in students in the long term in a more consistent manner. And, importantly, the framework would be a tool to communicate transparently about the competences to the students.

After examining the European and Finnish developments, it is natural to explore how they appear in comparison with developments outside Europe. They compare rather well, but improvements are definitely needed. In chapter 1.4.2 we learned that science and science education is considered crucial for everyone in the United States – from kindergarten to doctoral studies, from technicians to researchers – due to the unheralded complexity of the world today and the key position that science holds. Scientific understanding helps make sense of the world and make informed decisions about one's own life. Scientific competence is also critical for the ability of the United States as a nation "to continue to innovate, lead and create the jobs of the future" (NGSS 2011, 1). A high quality K-12 education forms the foundation for developing this competence.

Powered by this reasoning, NGSS Lead States collaborated to develop a national framework for scientific competences titled Next Generation Science Competences (NGSS), and new Science and Engineering Practices (SEPs) for K-12 education. These skills develop from the lower grade to the next grade forming a step-by-step progression. (See NGSS 2013 for a full description of NGSS and SEPs.) No such national competency frameworks or standards have been established at the EU or the Finnish level.

As a historical backdrop to the NGSS and SEPs, a notable initiative for improving UG research opportunities was published by the Boyer Commission on Educating Undergraduates in the Research University already in 1998. Key drivers for the report were many: lack of research opportunities for UGs; the finding that "all too often they [UGs] graduate without knowing how to think logically, write clearly, or speak coherently"; the critique that UGs have been shortchanged in their education; the fact that "a much greater range of undergraduate professional degrees has become available; the reality that "the freshman year has too often been reduced to remediation or repetition of high school curriculum, rather than an introduction to a new and broader arena for learning". The commission recommended, among others, offering an inquiry-based freshman year, and research-based learning facilitated by a mentor engaging students in research. Regarding theses or dissertations, the committee stressed the importance of a capstone course or senior seminar that is "the culmination of the inquiry-based learning learning of earlier course work, broadening, deepening, and integrating the total experience of the major". This would allow students "to understand their own potential for serious work and develop the aspiration to do it well". This type of a course is intended to prepare the UG for "the expectations and standardsof graduate work and the professional workplace. (The Boyer Commission 1998, 1–6.)

The commission's recommendations proceeded to have a great impact on UG curricula and education in the United States. The follow up report (the Boyer Commission on Educating Undergraduates in the Research University 2001, 2) indicated that universities had taken heed of the recommendations, but there was still room for development.

The above trends are in line with the demands of pedagogues and practitioners in many academic fields. Dozens of academic and practitioner articles have been written about the urgent need for bachelor's degree holders to operate as consumers of research and/or as producers of research, that is, the need to be capable to consume and/or conduct research. The evidence-based (EBP) practitioner discourse aims at this also. A typical definition of EBP in the field of care, nursing and medicine states as follows.

> *conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients. The practice of evidence-based medicine means integrating individual clinical expertise with the best available external clinical evidence from systematic research.*
> (Sackett , Rosenberg, Gray, Haynes & Richardson 1996, 71.)

Additionally, the terms professional investigator, research-informed practice and research-informed career-long professional development have been in use to refer to EBP. To give just a few examples of field specific requirements for IL and reseach competency the following: occupational therapists (Cusick & McCluskey 2000), social work students (Garrett 1998) and teachers (BERA 2014). At master's level, Yankeelov, Sar and Antle (2010) propone the importance of moving from producing research curriculum paradigm to evidence-based-practice/consuming research curriculum paradigm in MSW programs in order to facilitate true EBP for graduates in working life. In his view, while consuming research, students also learn to design research due to the large number of research articles they need to review and evaluate. Thus, the interactions between producing and consuming research, and becoming an EBP practitioner appear to differ between writers. For some EBP is only consuming resarch in order to apply it in work, for others EBP is both consuming and conducting research. Although quite fascinating, a more in-depth discussion of EBP in the context of this study is not possible. I do, however, consider it relevant and worthy of mention as it relates to research competences overall.

In conclusion, upon reading this type of literature, the question inevitably arises why such discourse is not an every-day occurrence in the Finnish HE and RDI policies and pedagogic discourse of all Finnish HEIs, in general, and in business as an academic field and a profession, in specific from the viewpoint of this study. Surely business practitioners need to engage in EBP in order to utilize organizational resources optimally, effectively and efficiently and provide the best products and services both B2C and B2B customers require.

1.4.4 Research pedagogy and pedagogies

The previous two chapters discussed what competences a person needs to engage in research and development work. This chapter focuses on the question how to teach these competences, that is, research pedagogy. The review here focuses mainly on pedagogies used in UG research methods courses, research fellowships, research experiences, and UG dissertation (thesis) processes.

"The biggest challenge may be teaching research to those who are not researchers and do not aspire to be researchers" (Fowler 2014, 205). This quotation sums up aptly the case of the average

Finnish UAS bachelor's degree student, who tends to be more professionally[12] than academically oriented. This forms a challenge for teaching and learning research skills in UASs. There are, of course, also UAS students motivated to develop their research competences because they aim to continue to a research university master's degree, and sometimes also further to a doctoral degree. This is common for students who failed to get to the research university upon first application and chose the UAS as the second best choice, or those who are planning to use the UAS bachelor's degree as a stepping stone to the research university.

There is an abundance of literature advising faculty how to teach research and research methods. Crucially, the pursuit for effective and efficient research education has generated respectable number of research reports at the disciplinary and multidisciplinary levels testing various research pedagogies in action, and describing UG students' competency development and experiences of these pedagogies. The terminology used reveals a great variety of teaching approaches. Terms, such as, research pedagogy, qualitative research pedagogy, enquiry-based pedagogy and research-like learning experience are at times used without further definitions (e.g. Bolin *et al.* 2012; Malcolm 2012, 565, 567). Key objectives have included enhancing student learning, understanding and retention; facilitating student engagement and competence development; designing more fun courses; reducing students' research anxiety and negative research attitudes, and increasing students' research knowledge, and, through that, their research self-confidence and research self-efficacy. Before delving deeper into the most effective methods of research education, that is, research pedagogies, in chapter 1.4.5, some key terms need to be defined.

In their seminal work on **research pedagogy** Garner, Wagner and Kawulich (2009) aim to create a pedagogical culture in research methods, and establish a new academic field of **research methods pedagogy**, specifically. They place the need for this in the changes in the context. In the past, the idea that research methods could be a subject in the curriculum was mostly unknown; whereas current pressures for increased enrolments, retention and completion rates has led to an understanding that research is a topic to be taught. By the term **pedagogical culture of research methods** they mean: "the exchange of ideas within a climate of systematic debate, investigation and evaluation surrounding all aspects of teaching and learning in the subject" (Garner *et al.* 2009, 2). The authors describe students who "were generally flying in the dark" in research courses; and the subsequent need for the students to learn research methodology, both discipline-specific and generic, through structured coursework run by passionate and skilled research methods teachers.

[12] Note that I am purposefully using the term professionally rather than vocationally.

Barnacle (2004, 356, 361, 364, 365) speaks from a critical ethical viewpoint stressing that research pedagogy or pedagogies – including **applied research pedagogies** – should not be reduced to a tradable commodity based on the instrumental conception of applied science and the economic imperative. Rather than producing knowledge and skills to only serve the innovation systems or practice in a narrow sense, the goal of research pedagogy should be to develop students abilities to embrace criticality as a way of life, to become what Barnett calls **critical beings** capable of "critical thinking, critical action and critical self-reflection" (Barnett 1997, 1, referenced in Barnacle 2004, 365). In today's world of varied and sometimes questionable agendas driving RDI activities, this focus on developing a research pedagogy or pedagogies, and the stressing of ethical issues in research is much needed in all academic fields and at all degree levels – including UAS bachelor's programs.

The concept of **research methods anxiety** refers to "the complex array of emotional reactions which occur when students encounter research methods in any form". A multidimensional conceptualization of research anxiety includes dispositional, situational and environmental causal factors leading to the varied natures and levels of experienced anxiety. (Papanastasiou & Zembylas 2008, 156–157.) Typically these negative emotions are pre-existent and hinder learning. Anxiety has been found to be debilitative in that it results in lowered course performance (Onwuegbuzie & Wilson 2003, 199–200).

The term **research interest** has been defined as a combination of personal characteristics, environmental influences, research self-efficacy, and research outcome expectations (Lent, Brown & Hackett 1994, quoted in Lambie, Grant Hayes, Griffith, Limberg & Mullen 2014, 143). Research competency is believed to predict a student's interest in conducting empirical research (Lambie *et al.* 2014, 143). Also the terms **research orientation** and **research attitudes** have been used. Research orientation has been measured by examining the student's beliefs about the importance, the usefulness and the biased nature of research. Research attitude measures have covered research anxiety and research interest. (Bolin *et al.* 2012.)

Another key concept is **research self-efficacy**. It describes "individuals' beliefs in their ability to perform certain tasks such as conducting sound empirical research and disseminating the research findings". It also encompasses individuals' cognitive processes, behavior choices, intrinsic and extrinsic motivations, and social-cognitive maturation (Lambie *et al.* 2014, 142, referring to Bandura 1986). A simpler definition with same core meaning is found in Holden, Barker, Meenaghan and Rosenberg (1999, 464): "the extent to which students are confident about carrying out different research tasks, from library research to designing and implementing practice research projects". Interestingly, the authors' use of the term self-efficacy in Bandura's (1997, 3

referred in Holden *et al.* 1999, 464) meaning as confidence in "one's capabilities to organize and execute the courses of action required to produce given attainments" equates research self-efficacy with the concept of **research self-confidence**. Holden and colleagues (1999, 466) developed the **research self-efficacy (RSE) scale** to measure a person's "confidence in their ability to complete specific research activities".

The concept of **teaching-research nexus** (TRN) is a wide area of academic research that should be at least briefly visited in the context of any investigation of student research competences, activities and experiences. The way in which TRN works or fails to work within HEIs influences how students view research, whether they learn research competences, how and to what level of competence. A conceptual review of this multifaceted and sometimes confusing concept revealed seven categories of relationship or, more exactly, dimensions of TRN:

1. *Learners do research*
2. *Teachers do research*
3. *Teachers and learners research together*
4. *Research embedded in the curriculum (Research influences the what and the how of curriculum design)*
5. *Research culture influences teaching and learning*
6. *The nexus, the university and its environment*
7. *Teaching and research influences research*

(Wareham & Trowler 2007)

The nature of the teaching–research link can be described in various ways within the above dimensions, such as, to link, to inform, to support, to enhance, to add value to and to integrate (Wareham & Trowler 2007).

To show TRN in action, let's look at one study located within the TRN literature. Turner, Wuetherick and Healey (2008, 199) conducted "an international multi-institutional comparison of student perceptions of research and its impact on their learning environment". Based on literature, Turner, Wuetherick and Healey (2008, 200) highlight four main approaches to the TRN: "learning about others' research; learning to do research; learning through the research process; and pedagogic research). The survey sample consisted of final-year UG students (n=515) from three institutions in the United Kingdom and Canada. Key findings indicated: that students in research-intensive universities were more aware of faculty's research activities; that students had varied experiences from learning about other's research, learning to do research and learning through the research process[13]; that less than one third reported experiencing the development of research skills; that those in research-intensive universities reported significantly more both positive and

[13] Referring to the discussion in chapter 1.3.3, "learning about other's research" is *consuming research* and "learning to do research " is *conducting research.*

negative impacts of research on their own learning; and, that a significant number of students reported learning best when involved in their own projects. (Turner *et al.* 2008, 206–207). The authors concluded: that students' feeling of inclusion in the research community needs to be improved; that institutional strategies should be utilized to raise awareness of skill development; and that undergraduate curriculum should offer opportunities for research-based learning (Turner *et al.* 2008, 207–209). This finding clearly supports Garner and colleagues' (2009) aim to establish a pedagogical culture of research methods to improve students' research competence. TRN is not the focus of this study, but one should be aware that it is a possible area of interest when looking more deeply into the phenomenon at hand.

To conclude this chapter, I briefly present definitions for the terms research pedagogy, RDI pedagogy and RDI competences in the context of this study. The philosophy, science and, I venture to claim, art of research is a multifaceted phenomenon that exists independently and as an integral part of all disciplines, because of the disciplinary ontological, epistemological and axiological paradigms that determine what is, how knowledge is obtained, what qualifies as knowledge, and what knowledge is of value.[14] The discipline of education aims to establish how people learn, what the methods of teaching and learning are, what methods function best for a specific purpose, and how learning can be assessed and measured.[15] Following these two simplified definitions, **research pedagogy** aims to establish what research competences are, how they are taught and learned, what methods are most effective and efficient for specific purposes, and how research competences can be assessed and measured. By extension, **RDI pedagogy** explores the same with the addition of development and innovation activities. **RDI competences** include the attitudes, the knowledge, the skills and the competences required to engage in RDI projects effectively and efficiently.

1.4.5 Effective methods to teach research

Studies of **research and research methods courses** have revealed that a variety of pedagogical approaches help students develop positive attitudes and orientation to research, increase interest in research, lessen research anxiety and, as a result, develop research competences, and increase research self-efficacy and self-confidence. Some of the approaches below are more effective than others. All help attain one or more of the goals of research education. All have been found to have a positive impact. The list below presents all the effective teaching and learning approaches found

[14] It is not in the scope of this study to discuss metaphysics and the philosophy of research in more detail, so let this simplified explanation suffice here.
[15] Again, the wide range of educational sub-disciplines is not within the scope of or relevant for this study.

in relevant literature when focusing mainly on UG research education. List format was chosen for two reasons: to present the methods briefly and informatively, and to allow a more in depth discussion of research reported in chapters 1.4.6–1.4.9 and 1.4.11. Many of the methods were applied in the educational design of the bachelor's thesis process researched in this study. More details on the specific methods used can be found in chapter 2.2.

Effective teaching and learning approaches in research and research methods education:

- Ensure positive instructor characteristics and behavior, such as, conducive instructor personality, positive attitude and behavior including instructor's encouragement and flexibility (Onwuegbuzie & Wilson 2003, 18); skillful teaching staff and demonstrations of the relevance of the research course, lecture contents, tutorials and course readings (Halcomb and Peters 2009); utilizing human-mediated services as opposed to computer-mediated ones, for example, in the form of one-on-one coaching on assignments, faculty comments to drafts, and support from librarians; staff that explains clearly their expectations research implementation, production of high-quality papers, and evaluation of outcomes (Head 2008).
- Offer information literacy instruction to improve students' IL competence (Head 2008, 437).
- Offer individualized training, one-on-one coaching sessions and the possibility to write drafts for instructor comments. All these are methods "to close the gap students know exists between their own knowledge of the research process and that of their instructors" (Head 2008, 343, 437); individualized plans and pace of instruction, and developing a feeling of empowerment (Bolin *et al.* 2012).
- Provide students with a basic orientation to the importance, usefulness and validity of research, and offering a variety of hands-on research experiences to show the relevance of research to practice (Bolin *et al.* 2012.).
- Utilize project based courses (as opposed to contact class based course) especially in large compulsory research courses in an authentic environment benefiting a commissioning company (Winn 1995) and agency-based projects based on a service learning approach (Kapp 2006); combine service-learning approach with a research course and a practicum to allow the student to find a topic arising from the needs of the host organization and to experience the complexity of a full research process from topic definition to delivery of a resarch report, which may also include an instrument for the organization's use.
- Ensure the development of a combination of knowledge (conceptual competence) and ability (doing, procedural competence) by linking reading tasks with activities to facitate application of concepts on 'real life' problems (Strayhorn 2009).

- Utilize a stratified approach in class and library based research courses allowing each student to work simultanously on the same phase of his own term paper (Leckie 1996).
- Use well structured student-centred tutor led approaches (as opposed to traditional didactic approaches) relying on well trained and mentored student tutors (Edwards & Thatcher 2004).
- Make use of cooperative small-groups with a predefined “step-by-step” experiential approach that facilitates learning complex topics more thoroughly, helps students synthesize their thinking, gain depth of understanding, help one another find flaws in their reasoning, develop new perspectives, and improve their ability to explain ideas (Garrett 1998; see also Onwuegbuzie, Leech, Slate, Stark, Sharma, Harris & Combs 2012, 40); activity based class room sessions making use of "cooperative and collaborative small group activities, class discussions, case studies, role play, formative quizzes, brainstorming" (Edwards & Thatcher 2004, 200); group work and class interaction (Halcomb & Peters 2009); participatory learning techniques (PLT) (Duze 2010); active collaborative-based research projects in small groups (Campisi & Finn 2011).
- Apply the living-data technique by relying on active-learning exercises, where students “become living data, respondents and/or researchers conducting the study” and are “also asked to report their research experience from their unique perspective”. (Rohall, Brown, Moran & Caffrey 2004, 404-405.)
- Require students to write reflective journals to reflect, among others, on their biases toward research, their investment in and commitment to the course (Onwuegbuzie *et. al.* 2012, 38).
- Assess through on-line quizzes, and offer instructor feedback on assignments (Halcomb & Peters 2009).
- Offer technology-mediated undergraduate dissertation courses (e.g. 10 weeks), whose design includes a complex, structured working process with several deadlines, and in-class and on-line dialogues aimed at building a learning community as resource for the students’ learning and formative peer assessment (Jaldemark & Lindberg 2013).
- support students with the development of functional writing habits and increasing writing productivity through one ore more of the following methods: working with small and easy weekly objectives; using word processors; writing in an adequately set-up working area; writing intensively 2–4 hours a week; writing section by section; writing drafts; checking and rewriting drafts; asking for frequent comments on drafts; accepting and considering critique; taking risks and learning from mistakes; learning new writing and creativity techniques; asking supervisor’s help to manage research tasks supported by a contingency system facilitating internal personal control; controlling impatience and procrastination through time and task

structuring; maintaining a log of writing time to grasp the time-work perception; and participating in writing support groups utilizing social activity. (Valarino & Yaber O 2002, 77).

- Offer ways to diagnose the symptoms of research writer's block, provide information about the phenomenon and aid staff to deal with it (Valarino & Yaber O 2002, 76).
- Ensure instructors' immediate awareness of students' anxiety, sensitivity to it and purposeful methods to lower it (Papanastasiou & Zembylas 2008, 165).
- Reduce anxiety by applying a variety of techniques, offering courses utilizing social-learning theories and cognitive behavioral anxiety-reduction techniques, such as, lectures on anxiety, progressive muscle relaxation and examination of distorted thinking patterns (Fabelo-Alcover 2002); attending to students' cognitive-intellectual and emotional-affective aspects during the course (Ryan 2008). A thorough literature review by Onwuegbuzie and Wilson (2003, 202–205) found several statistics anxiety reduction methods, such as: humorous carton examples; biofeedback training; cognitive intervention; teaching gimmicks (e.g. students as the source of the data); journal writing; requiring students share apprehensions and anxiety at the beginning and end of the course: students discussing anxiety followed by a lecture on ways to cope with it; utilizing current news stories to introduce and explain basic statistical concepts and research methods; reading and critiquing research articles; applying statistics to real-world situations; blending content with process; using in co-operative groups; untimed examinations where supporting material is allowed: open book or open note examinations: performance assessments related to everyday life (projects, tasks, assignments, investigations) and evaluation of student products as opposed to examinations; not only assessing what students know but also what they can do by observing, documenting, and analyzing student work.
- Employ carefully designed qualitative and quantitative assessment processes and tasks in methods instruction to promote and consolidate student learning, to set clear expectations, and enhance student motivation. Key areas in education design include: using competences to design, research curriculum and assessment tasks, balancing theory and practical assessments, using multiple assessment tasks, developing assessment that builds on previous knowledge, balancing group and individual projects, and providing and receiving feedback. (James, Ward, Dickson-Swift, Kippen & Snow 2009, 139.)

Fowler (2014, 207) brings all the above advice together by pointing out that "research is a skill that requires a foundation of knowledge and its applicability to practice or "real life". Fowler's (2014, 205-207) literature review of effective research tuition methods lists as innovative interactive strategies, for example, putting research into context by applying knowledge to the real world,

making the added value of research skills visible, utilizing blended methods including role plays and practical activities, using problem-based learning, applying modern possibilities of edutainment, and ensuring learners are in contact with others undertaking research so that they can share failures and successes. Fowler points out that since research is a process, educators need to coach students in steps throughout the process. Additionally, she stresses the importance of actively addressing students' attitudes toward research, anxiety and feelings of being overwhelmed.

Information literacy instruction should ideally build on an integrated or tiered approach to information literacy skills throughout all the study years of a higher education curricula (ACRL Association for College and Research Libraries 2014; McNicol & Shields 2014. Miller 2014;). An effective way to do this is to deliver course-intergrated literacy skills. The University of Richmond's Boatwright Library's (2010) four-year plan is an excellent example of the year-by-year integration of IL competences throughout the bachelor curriculum from the first year's focus on foundational knowledge and availability of reseources to the third and fourth year's wider and more in-depth IL competences.

1.4.6 Studies on UG Research Experiences – UREs

Undergraduate research fellowships, projects and experiences commonly offer a more in-depth and immersive research learning opportunity than courses, and as an experience bear a better resemblance to the dissertation process. Due to this semblance, I focus in this chapter in more depth in studies exploring the methods and benefits of these experiences. Undergraduate research experiences are quite common in U.S. and U.K. higher education, and interest in them is growing as they are considered a "high-impact educational practice" and "powerful for students who have them" (Laursen, Seymour & Hunter 2012, 31, 36). The studies discussed below do support this claim, but the findings also indicate that there is much room for improvement in the pedagogic solutions used in UREs. The literature review also, interestingly, shows the variety of acronyms that has been developed to discuss the phenomenon of undergraduate research experience.

Laursen and colleagues (2012, 32) investigated the benefits of undergraduate research experiences (UREs), processes through which URE's deliver the benefits, and their advantages and cost to the faculty and the institution by interviewing circa 400 students, alumni, faculty and administrators. The focus was on "the traditional most intensive model of undergraduate research where students pursue a a multi-week, open-ended scientific process outside of class" (Laursen *et al.* 2012, 32). Typically this is done in summer, although these modules can also be implemented

during normal semesters. Laursen and colleagues describe this “pedagogy of undergraduate research” in the following manner: “Crucial in defining UR experience is the apprenticeship of the novice researcher to an experienced scientist. As novices learn the intellectual craft and social practices of science by doing it, they are guided by advice, help, and moral support from more experienced colleagues. --- Investigating an authentic scientific problem using real disciplinary tools motivates and gives intellectual significance to the investigation; it also offers a limitless supply of teachable moments that skilled advisors can exploint for their deep educational value.” (Laursen *et al.* 2012, 31.) The key teaching strategies included: carefully scaffolded but authentic scientific projects; good use of teachable moments (e.g. through modelling); being approachable while encouraging students to see faculty as problem solving partners instead of providers of answers; ensuring the authenticity of the research process and evaluation standards. Applying these strategies leads to: “close, collaborative work on an authentic project in which both student and advisor have a vested interest --- beyond what is typically labelled ‘authentic inquiry’ or ‘investigation’” (Laursen *et al.* 2012, 34). The responses of student (n=76) and faculty research advisors revealed overwhelmingly positive observations (over 90 % of 3400 observations). The perceived gains by students and faculty could be thematized using the same categories, although there were differences in the percentages. The distribution of gains perceived by students included personal or professional gains (25 %), thinking and working like a scientist (24%), skills (23 %), becoming a scientist (c. 12 %), career clarification (10 %), enchanced career preparation (9%) (Laursen *et al.* 2012, figure 1, 23).

Hunter, Laursen and Seymour (2006) utilized a qualitative method, ethnography, to implement a longitudinal and comparative study of undergraduate research (UR) experiences of both students (pre-UR n=76, post-ur n=69), faculty advisors (n=55) and administrators (n=9). In the UR, faculty and students collaborated on a research project that offered the undergraduates the opportunity to learn research skills through apprenticeship in a community of practice. The student experiences of this longtudinal three-year study were reported by Seymour, Hunter, Laursen and DeAntoni (2004). In-depth interviews of undergraduates (n=76, female 31%) indicated that they evaluated the UR experience very positively with 91% of them indicating gains of some type. “Expressed as percentages of all reported gains, they were personal-professional gains (28%); “thinking and working like a scientist” (28%); gains in various skills (19%); clarification/confirmation of career plans (including graduate school) (12%); enhanced career/graduate school preparation (9%); shifts in attitudes to learning and working as a researchers (4%); other benefits (1%)” (Seymour *et al.* 2004, 505-506). The skills set students considered most important was gains in communication (43% of students). The communication

items included presentation and oral argumentation, writing and editing, laboratory and field techniques, work organization, computer skills, reading comprehension, working collaboratively, and information retrieval. Again, from the viewpoint of the current study, the above communication skills list does not include the ability to engage with commissioning agencies or persons, or respondents in the field. Interestingly, 57% of the responses referred to higher-order inquiry skills ("thinking and working like a scientist"). Overall, the findings supported the "proposition that undergraduate research is an educational and personal-growth experience with many transferable benefits" (Seymour *et al.* 2004, 530).

John and Creighton (2011) surveyed undergraduates (n=366, females 53%) from multiple disciplines in order discover how UK undergraduate research opportunity programs (UROPs) develop research skills. In a UROP in the United Kingdom, an undergraduate gets the opportunity to engage in an authentic research project of a faculty member for a period of 6-10 weeks.Students benefit by developing research skills in an authentic community of practice, and staff receives student contributions toward a larger research project. The findings indicated that undergraduates experienced a significant increase in research skills, an improved understanding of the research process and, thus, a higher level of confidence in their ability to undertake research.

In Australia, Cuthbert, Arunachalam and Licina (2012) investigated through surveys and interviews undergraduate social sciences students' (n=15) experiences in the context of an authentic UG research experience course, where staff and students worked as co-researchers. The findings indicated that engaging in real research allowed the students to to work on something concrete, and, through that facilitated a deeper understanding of research. As a result, the students' research literacy improved.

Kardash (2000) investigated the development of science undergraduates' (n=51) research skills during a URE using a pre-post measurement study. Kardash's (2000, 192) objective was "to develop a quantifiable list of research skills" for subsequent use to assess the development of research skills during UREs. The URE was designed based on constructivist ideals of cognitive apprenticeship and situated cognition, and aimed to offer as authentic a research activity as possible. A faculty mentorship process supported the student's learning, and aimed to enable him to make a meaningful and original contribution to the research project. At the end of the URE, the student produced a research report that was critiqued to ensure its acceptability. Thereafter the report was disseminated. The findings indicated that the URE impacted positively the development of students' research skills. Students' self-reports indicated a significant increase the skills over the span of the URE. The faculty mentors' assessments of the students were either very similar to, or only a little below the students' own assessments of research skill development indicating that the

students had realistic self-assessments. The 14-item research skills assessment instrument Kardash developed based on prior literature was found to be useful as a summative and a formative research skills assessment tool. The measurement foci were

- *Understand contemporary concepts" in the study field*
- *Make use of primary scientific research scientific literature" in the field*
- *Identify a specific question for investigation based on the research" in the field*
- *Design an experiment or theoretical test of the hypothesis"*
- *Understand the importance of "controls" in research"*
- *Observe and collect data"*
- *Statistically analyze data"*
- *Interpret data by relating results to the original hypothesis"*
- *Relate results to the "bigger picture" in" the field*
- *Orally communicate the results of research projects"*
- *Write a research paper for publication"*
- *Think independently"* (Kardash 2000, 194)

The research skills both students and mentors felt developed the most were: observing and collecting data, understanding the importance of controls, interpreting data, communicating the results orally, and thinking independently. The skills that both students and mentors reported developed the least were: identifying a question for investigation, formulating a hypothesis, and designing a test of the hypothesis. Comparing the mentors' and interns ratings, interns overestimated their development in the following skills: understanding the importance of controls, relating results to the bigger picture, and analyzing data statistically. Interestingly, in both the pre- and post-measurements the students rated lowest their skills in formulating, testing and refomulating hypotheses, and writing research papers. Notably, from the viewpoint of the current study, the above research skills list does not include the ability to engage with commissioning agencies or persons, or respondents in the field.

Lopatto (2003) reported on faculty (n=41) and student (n=249) conceptions of undergraduate research in three esteemed U.S. institutions. The staff of all three institutions considered the essential features of a URE to include: reading scientific literature; designing and conducting research; working in a team of peers or with a faculty mentor; experiencing increasing ownership and independence; mastering research techniques; communicating orally and in writing (Lopatto 2003, 140). Lopatto (2003) categorized the features into structure and consideration items. Structure items facilitate the structure of the research problem and process, and are easy to prepare and schedule during the planning of the URE process. They include course content, learning tasks, scheduling, provision of primary literature, outcome requirements, facilities and equipment. Consideration items, in turn, refer to mentor behavior characteristics contributing to student's

emotional and social needs, and they are quite difficult to plan and schedule. These include such personal or interpersonal features as availability for consultation, openness for student's views, and behaving in a helpful and concerned manner. (Lopatto 2003, 139–140). The staff's list of benefits of successful undergraduate research experiences dovetailed with the essential features: learning a topic or subject matter in detail;constructing a meaningful problem and applying knowledge in a real situation; learning to use appropriate methodologies; learning to work and think independently; learning to analyze data and design solutions; improving oral and written communication skills; understanding scientific research and researchers' work; clarifying career plans, and orienting toward future work and education (Lopatto 2003, 141). Students, in comparison, named as the five most important benefits a combination from the following: enhancing professional or academic credentials; clarifying a career path; understanding research in your field; learning a topic in depth; developing a relationship with a faculty member; learning to work independently; learning laboratory techniques; tolerating obstacles in the research process; understanding the thinking of scientists, and how they work on real problems. Lopatto (2003, 141-2) grouped these into career-oriented, cognitive, behavior and social benefits. Examining the convergence of staff and student responses revealed that students valued consideration items more than structure items. Lopatto (2003, 141) concluded that structural items alone do not guarantee success "without a concomitant attempt to develop the art of considerate mentoring in science faculty".

Another study that highlights the importance students place on what Lopatto (2006) above called consideration items. Jamieson (2006) studied undergraduate medical students (survey n=36 followed by a focus group n=3) and their faculty supervisors (n=39) after the submission of mock research papers to establish their expectations for supervision, and the match of their mutual expectations during an undergraduate research student (URS) experience. The collective student-supervisor match was fairly good. Out of the 30 student-supervisor pairs only 5 were potentially mismatched in terms of mutual expectations. Out of the 33 survey items, the student median (1=low priority 1, 5=high priority) was 5 for five survey items (being well informed about the different aspects of the course/research project; being available and easy to approach about any problem; being interested in the student's research project; commenting on the content and drafts; ensuring that the project is of appropriate size and degree of difficulty) and 4 for 21 survey items (for example, helping with topic selection; relaying the extent of support available in terms of resources and expertise; informing of staff expectations about performance and progress; giving new ideas for alternative research directions; helping to identify important goals; answering specific questions; giving strong encouragement in the research; assisting the student to consult

other people for expertise; making available regular discussion groups. The remaining 6 survey items rated at 2 or 3. The number of items rated 4 or 5 shows that students appreciated quite highly a wide variety of student-supervisor interaction aspects.

Similar results were gained from a large statistical study in the United States. The nonprofit, independent research and innovation center, SRI International, serving government and industry in the United States surveyed circa 11 400 undergraduates with an undergraduate research opportunity (URO) experience from STEM (science, technology, engineering or mathematics) and SBES (social, behavioral, economic science) fields. Students reported that UROs increased their understanding of conducting a research project a fair amount or a great deal (88 %) and increased confidence in their research skills (83 %). The most common suggestion from students, however, to an open question about improving UROs was offering increased or more effective faculty guidance. (Russell, Hancock & McCullough 2007.)

Cox and Andriot (2009) implemented an 11-week summer research program for undergraduate engineering and science students (n=124). The program offered “integrated, research-related, hands-on learning through discovery” facilitated by graduate and faculty mentors. Students conducted research tasks and participated in social activities, attended research and professional development seminars, and presented their research at the research conference to conclude the experience. Student, faculty mentor (n=96) and graduate mentor (n=58) ratings of students’ research ability levels at the end indicated, amongst other things, that faculty mentors rated the students significantly lower ($p < .01$) than students rated themselves in the ability ‘to frame a specific research question’, and in the ability ‘to formulate a research hypothesis based on a specific question’. The average student self-rating of the question ‘I am confident in my ability to frame a specific research question’ was 3.52 (SD 0.58) and of the question ‘I am confident in my ability to formulate a research hypothesis based on a specific question’ 3.5 (SD 0.56) on a four-point scale (1=disagee, 4=agree). Other student self-ratings related to the early stages of a research project included retrieving ‘information from the library and internet’ (avg. 3.79, SD 0.43) and applying ‘critical thinking and problem-solving skills in an authentic research experience’ (avg. 3.58, SD 0.63). Overall, students tended to evaluate their research abilities as higher than their faculty mentors did. At the end of the experience, students were “most confident in their abilities to relate well to people of different races, cultures, or backgrounds”. Alarmingly, the researchers concluded that faculty does not give attention to students who most need mentoring in research abilities and skills, in part because those students tend to overestimate their research ability and therefore do not feel the need to seek faculty advice. Thus they may "in danger of 'falling through the cracks.'" (Cox & Andriot 2009, 38).

The review focuses on bachelor-level students, but results from master-level research experiences can also yield interesting insights to the development needs in bachelor level research pedagogy. Desbrow, Leveritt and Palmer (2014) used a qualitive phenomenological research design to find out the lived experience of a full-time research semester curriculum initiative offered to 25 dietetics master's degree students in an Australian university. The pedagogic approach utilized mentoring instead of a typical supervisory approach. Students' descriptions of their learning experiences highlighted unexpectedly high workload, time pressures, intense learning processes, the difference and challenges of self-directed learning, and the variable level of academic support and access. Overall, the experience was imbued with a feeling of stress. The perceived impacts included an increase in research self-efficacy and competency, a sense of achievement, career insights and, the exposure to professional and employer networks and increased employment competitiveness. Stress featured also as an important impact. The authors concluded that "research, evaluation and broader professional competency development is enriched by learning and training interventions that expose students to the complete reserve and evaluation practice cycle" (Desbrow *et al.* 2014, 63.)

The study at hand examines a multicultural group of thesis students where half are domestic and half international students. A study of special interest in this context is a study with a sample that consisted 34% of international students. Eisenberg (2010) analysed a subsample (n=8353; complete survey sample n=112 844 undergraduates) of 2nd, 3rd and 4th year students from 24 U.S. colleges and universities to find out what difficulties students faced in course-related and everyday life research from the beginning to the end of the process, and how they conceptualize the process. The three most difficult steps in the course-related research processes were getting started (84%), defining a topic (66%) and narrowing the topic down (62%). Based on the results, Head and Eisenberg identified four main stages of research and their level of difficulty. For each of the stages they calculated a difficulty scale based on the frequences of specific responses. The most difficult course-related research stage was "task definition" (containing the measures for getting started, defining a topic, narrowing down a topic) with 69%. Next came "self-assessment" (containing the measures of creating search terms, finding articles in library databases, finding content on the Web, finding up-to-date materials, figuring where to find sources that may exist) with 41%, followed by "use of information (containing measures for determining the credibility of Web content, filtering and sorting results, evaluation of materials, reading through materials gathered, integrating information from different sources, writing up findings for an assignment, knowing how and when to cite sources, knowing if use constitutes plagiarism) with 30%. The least difficult research stage was "using information" (containing deciding when finished with research,

knowing if a good job was done, knowing answer is online but was not found) with 25%. Interestingly, students who found the first research stage most difficult also were eager to research a topic comprehensively (78%) and learn something new (78%). Although passing the course (99%), finishing the assignment (97%) and getting a good grade (97%) mattered most to students, they also had interest in developing themselves: conducting comprehensive investigation on the topic (78%), learning something new (78%), finding answers to prove research undertaken (76%), improving analytical skills 69%), integrating my perspective into paper (65%), improving writing skills (63%), improving research skills (63%) and having chance to be creative (55%). To sum up, the researchers considered as their major finding:

> *The beginning of the course-related research process is rife with challenges for most college students, according to our survey results. Even though many students may consider themselves adept at evaluating information and applying techniques for tackling one course-related research assignment to the next, the sheer act of just getting started on research assignments and defining a research inquiry was overwhelming for students—more so than any of the subsequent steps in the research process.* (Head & Eisenberg 2010, 2.)

In spite of the many benefits discussed, there are also provisos to UREs. Cox and Andriot (2009, 36) conclude that ""one-size-fits-all" model of research may not be feasible". Laursen and colleagues (2012, 31) argue that the apprenticeship model of UREs contains a fundamental tension: whether it is a scholarly student endeavour or a scholarly faculty endeavour. The faculty member has a dual role in UREs as both a teacher of research for students, and a scholar engaged in research since the research project is ultimately owned by faculty. There is also the challenge of mentors having to accept "weaker" students or too large a number of students beoynd their ability to mentor in a single URE. The situation arises especially when the URE pedagogy is applied to the whole student population as a mandatory curricular requirement. Due to this they also recommend the use of classroom-based inquiry. (Laursen *et al.* 2012, 36.)

These UR, URE and UROP studies bear repeated evidence to the efficiency and efficacy of the undergraduate research experience as an immersive research learning opportunity. Participation in them tends to produce more positive student attitudes to research by offering insights into the importance and relevance of research. Research anxiety can be reduced, and research competences and self-efficacy improved. Simultaneously career planning is advanced. However, there is room for additional research and practical testing of new improved pedagogic concepts. Firstly, some important research competences do not develop apace with others – perhaps because they are not addressed well or frequently enough by the staff, or because they are harder for students to comprehend. Secondly, more skillful and supportive supervision and mentoring processes are

sorely needed. Based on student feedback, supervisors and mentors still lack in interaction, relational or consideration competences. Yet, these are a crucial component in the design of a meaningful undergraduate research experience in the form of positive faculty attitudes, good availability of supervisors and skillful individual supervision support. The need students express for supervisor support highlights the need for much scaffolding during the learning process.

1.4.7 Studies on the UG dissertation processs

The dissertation process as the culmination of a bachelor student's research activities raises many student concerns and, therefore, requires skillful application of effective research pedagogies by faculty. Research highlights several challenging areas in what Todd and colleagues (2006, 161) call the "dissertation journey". The term rings very true considering the cognitive, emotional and social challenges students undergo during the thesis process. More research into the lived experience of student's dissertation process has been called for in the U.K. as it is a pedagogically valuable process and well recognized as a challenging one (Todd, Bannister & Clegg 2004, 337). In this chapter, we first look into student experiences and perceptions of dissertation studies, and thereafter faculty's observations of the difficulties students experience during the dissertation process

Let's start the discussion with a study looking at the issue from the vantage point of students and faculty. The way the student views the function of the dissertation and the attitude he holds starting it provides an important starting point for the dissertation process. Faculty and student perspectives may differ greatly creating a sense of dissonance. Malcolm (2012) conducted a qualitative enquiry into student (n=20) and supervisor (n=15) perceptions of bachelor of honors dissertation experience in two professionally oriented business and management programs in UK. She aimed to identify the fit between the students' and the supervisors' conceptions of "learning in research mode" (Malcolm 2012, 566, referring Elton's 2005 term), and to identify the nature of the research-teaching link. The learning outcomes of the honors dissertation in this study were "(1) completion of a significant and independent research project; (2) the acquisition of research skills and (3) demonstration of deep and critically informed knowledge of the subject" (Malcolm 2012, 569). Students selected the dissertation topic based on their own professional interests. Results showed that both supervisors and students viewed the dissertation "a capstone opportunity" (Malcolm 2012, 572). Supervisors considered the dissertation a first-hand, authentic, iterative, enquiry-driven learning process, where the student's research interest could be awakened in the quest of new knowledge. Students explore the nature of research and learn about it its processes so

that, eventually, the "ignorance and naivety at the outset is subverted by experience" (Malcolm 2012, 571) of what research is and how it is done. In so doing students develop both generic and disciplinary research skills as well as project management skills. Supervisors did not, however, assign value to the dissertation results as a contribution to current knowledge and literature. This means that faculty did not consider dissertations research literature in the traditional sense of the word. Similarly, students viewed the dissertation process and outcome as a demonstration of ability without relevance beyond the process itself. They interpreted the dissertation process pragmatically in a linear fashion through a generic project management framework rather than as a quest for knowledge. They did not share the supervisors' perception of the dissertation as a process where research competences are learned; rather learning those competences was understood to be a side-effect and an outcome of managing the dissertation project. Students approached the dissertation in three main ways: a task to complete an academic requirement; satisfaction of personal subject interests; and something to attain optimal career value from (Malcolm 2012, 571). Supervisors viewed the first dissertation stage, the choice of subject, as critical. Students, however, saw topic selection "a facilitative stage in project delivery rather than the intellectual threshold identified by their supervisors" (Malcolm 2012, 572). The parties shared "the concern for the primacy of research process over the outcome", and the "primarily personal value of learning and achievement within that process" (Malcolm 2012, 572). Their views diverged, however, in whether they considered the dissertation to be a project (students' view) or a development arena for research and project management skills skills (supervisors' view); and whether the dissertation experience had value for future practice, and what exactly in terms of compencies learned (Malcolm 2012, 573).

Faculty attitude to the thesis also creates an important context for students to work on their thesis. Feather, Anchor and Cowton (2011) surveyed (n=21) and interviewed (n=6) supervisors from the field of business studies to ascertain the value they placed on undergraduate dissertations. The findings showed that some lecturers considered it important in that it offers the opportunity for more autonomous learning, and functions as one indicator of the skills students have gained during studies. Majority of supervisors agreed that it should be a compulsory curricular component. Differing views were expressed also calling, for example, for a more practical dissertation, or a voluntary dissertation for the benefit of less academic students with fewer requisite skills. The conclusion was that the "dissertation is considered by many lecturers to be practical, in that it allows students to choose their own topic of study, develop and undertake primary research, manage their own time, manage a major project, and write up a piece of individual work that is unique to them – a process that enhances skills useful in the workplace" (Feather *et al.* 2011, 56).

The authors recommended that dissertation modules may need revision to ensure that it provides value for all stakeholders by developing both academic and employability skills.

1.4.8 Student experiencess

The research or dissertation process as a whole is a formidable challenge for many students. Modelling the typical path from the student's viewpoint can therefore yield important insights into research pedagogic development needs. Tan (2007) used focus groups and narrative enquiry to study arts and letters, commerce, secondary education and pharmacy students (n=35) in an undergraduate thesis writing or research methods course, each ending in a research report that was defended orally by an individual or a team. A few students also published in journals, conferences or as poster exhibits. Each student or student group freely chose a topic of interest and implemented hands-on research using a single or multimethod approach. Students' feelings and activities during the process were clustered into three stages. Firstly, in the groping stage students experienced insecurity and fear because of feelings of inadequacy and fear about their ability to fulfill the course requirements with the skills and knowledge they had. In the topic selection phase they felt very challenged. These feelings persisted although students reported receiving intellectual and moral support from their research advisors, discipline experts, statisticians and peers. Tan (2007) interpreted the students feelings to arise from a lack of research-based learning in prior courses. The developing stage engaged students in selecting, organizing and synthetizing the information, selecting and implementing research methods, and analysing the data. Students reported a mix of feelings: confused and exhausted but intrinsically and extrinsically motivated; inspired and nurtured; motivated and humanized. This stage offered also the opportunity to learn to communicate and relate to various types of personalities, including those of the respondents. Supervisors were perceived as helpful and facilitatory. Tan (2007) underlined the importance of competent, motivating and supportive mentoring relationships to support the students' progress through the developing stage. In the accomplishing stage where students were completing the projects by synthesizing results and formulating conclusions, they reported feelings of excitement, fulfillment and frustration depending on their success in the research task.

Todd, Bannister and Clegg's (2004) study over a decade ago highlights the same student concerns as many more recent studies. Todd and colleagues studied final-year social science undergraduates engaged in an applied social studies dissertation module using semi-structure interviews (n=14) and surveys (n=44) in order to find out their experiences and perceptions at the end of the dissertation process, an area they found lacking research. The goal was to catch "the

students' lived experience of the dissertation as a form of independent learning and assessment, the challenges they encountered, and their perceptions of peer and tutor support" (Todd *et al.* 2004, 335). Students perceived the dissertation to be an authentic learning and assessment method, which motivated through a strong sense of ownership, facilitated the development subject knowledge and skills, and resulted in "an achievement in its own right" (i.e. the dissertation) (Todd *et al.* 2004, 345). It was considered gratifying, but not easy. Students struggled with the topic/question generation stage. Todd and colleagues interpreted the stage to be "a chaotic moment in the dialectical process of coming to terms with new ideas" (Todd *et al.* 2004, 345), where supervisory support appeared to be most important to help students move on with the dissertation project. They attributed the problem with producing a "'researchable' research question" to the students' lack of experience in the task, and suggested that students be given practice opportunities for it earlier in their degree courses. Insightfully, they stressed that although additional support may help students with the emotional challenge of topic development, the intellectual challenge remains as an essential part of the dissertation experience. "Even well-supported autonomy will always present students with real challenges" (Todd *et al.* 2004, 346). Other problems experienced by students were time management, where the authors stressed the importance of supervisor direction, and practical challenges such as problems faced collecting pripary data and accessing secondary material. The authors conclude that although more structured dissertation process might solve some of the problems found, a learner-centered experiential approach with supervisor support – albeit costly – is preferrable, and students should be prepared for this kind of independent learning earlier on in their degree studies.

Competent supervision is one of the keys to a successful dissertation process. Master's and doctoral students' research supervision has been studied and modelled by several researchers. Undergraduate supervision, however, has been studied much less. Heinze and Heinze (2009, 295) state that "the undergraduate dissertation allows the student to undertake a substantial piece of independent work". This freedom leads to studens feeling both uneasy and excited at the same time resulting in the effect of "chaos and cosmos" (Heinze & Heinze 2009, 205 referring to term by Silén 2003). Heinze and Heinze (2009) studied student views of undergraduate dissertation supervision experience, specifically of formative electronic assessment, by utilizing a student focus group (n=5) near the end of the dissertation module, followed an online survey (n=35) designed based on the focus group findings and administered after the submission of dissertations. Focus group findings higlighted the following student experiences: the lack of supervisor approachability and availability for consultation, and lack of helpfulness in meetings had a negative effect on the student's learning process; the supervision process was inconsistent across students and individual

supervisor allocation influenced greatly the success or lack thereof of students; and supervisors were expected to take a more proactive role. Some students never met their supervisor. The survey focused on supervisor-student meeting needs and supervisory communication issues. Overall, preferences for the speed, frequency and the media used in supervision varied, as did the amount of supervision students hoped to get, and the preferred formats of feedback with verbal being preferred a little over written notes, followed by comments on electronic files and trackable changes. There were also suggestions for a social aspect facilitating sharing of questions and answers via an e-solution. Heinze and Heinze (2009) concluded the key variable in the supervision process was individuals: on the one hand, the supervisor may need to adopt different supervision styles depending on the student, and, on the other hand, the student may or may not express that he hopes to get more or less supervision. Overall, students hoped for more supervision, ideally once or twice a week. The researchers highlighted that technologies are facilitating more varied types of interaction in addition to the traditional face-to-face meetings. Students were in more frequent interaction with their supervisors by email than by face-to-face meetings and telephone combned. Heinze and Heinze (2009) also point out that electronically given feedback helps international and widening participation students succeed. In their literature review (2009, 295), the authors pointed out that "supervision international students demands a certain level of altruism on the part of the lecturer", that is, requiring more attention both in supervisor's work intensity and time.

Another undergraduate supervision study yields very similar results. Derounian (2011, 91) uses the metaphor of dancing for dissertation supervision, stating that the "partnership or 'dance' may become fluent or purposeful … or may stumble". Derounian (2011) investigated the student-staff dissertation supervisory relationship through semi-structured interviews (n=14) and a survey (n=14) of environment, geography and sports undergraduates in different stages of the dissertation process, supervisory faculty (n=14) and internationally established academics specializing in teaching, learning and assessment (n=3). All students indicated the staff-student relationship to be important or critical. Overall, the findings highlighted the importance of the student-staff relationship throughout the dissertion process. The rank order of the combined responses from students, staff and experts set as the most important supervisor characteristic the display of subject/literature knowledge. This characteristic was followed by: realistic and actionable feedback; responsiveness, receptiveness and willingness to negotiate; encouragement, support and nurture combined with firmness; enhusiasm and enjoyment of the student's topic; assistance through structuring, steering and guiding; and accessibility. Derounian calls for further study of the topic with larger and more representative samples from a variety of disciplines.

The supervisor-student relationship is not without its problems, however. Greenbank and Penketh (2014) examined how students carried out the undergraduate dissertation research process, and how free they felt to determine their approach to it. They interviewed students (n=10) who had recently completed their dissertations for various disciplines. The findings indicated three critical areas of student concern. Firstly, the topic selection phase was found to contain internal tensions that arose in students due to the conflict between what they personally feel interested in, and what they perceived faculty would support. The authors concluded that the academic environment can severely constrain students' autonomy in the topic selection phase. Secondly, students felt their tutors pressured them to start dissertation work immediately. In actuality, however, getting started was hampered by assignments from other simultaneous courses running, by practical research process challenges, or by personal life situations. Some students started work late on purpose, feeling that they did not need a long time to complete the work and worked best under the pressure of a deadline. Lastly, the student-tutor relationship was the most significant interview theme taken up by the students. Greenbank and Penketh (2014, 468) interpreted this to be "because it [the student-tutor relationship] personifies the potential tensions that arise from the tutors' perceived need to scaffold and support dissertation students, whilst at the same time facilitating or encouraging independent learning". Students tended to perceive the relationship as a dialogic one as opposed to a transmissive one. They also were autonomous enough to dismiss some tutor advice in preference of their own interests and judgement. Interestingly, none of the students used other available student services, and mostly ignored the dissertation module handbook. The authors concluded that students' ability and willingess for autonomous learning in the dissertation process is influenced by their previous writing experience, confidence in their ability to write, belief in the ability to achieve objectives they set themselves, and the relationship between student and those advising them. Based on this preliminary small-scale study, they are planning to conduct a larger-scale follow-up study.

Individual supervision has long been the standard in dissertation processes in the western countries. New pedagogic solutions have been sought for and tested. Baker, Cluett, Ireland, Reading and Rourke (2014) investigated the impact of a change process from individual undergraduate dissertation supervision to peer supervision in a bachelor of nursing and a bachelor of midwifery program. The change effort aimed at finding more effective and efficient ways to supervise an increasing number of undergraduate dissertation students. Baker and colleagues (2014) utilized mixed methods focusing on students' experiences and learning outcome assessments. The new group supervision concept included nine pre-scheduled and structured two-hour group meetings based on an action learning model, an online forum for resources, discussions

and questions, and the possibility to negotiate 90 minutes of individual dissertation supervision time. Findings after implementing 13 supervision groups (n=163) indicated a positive reception by students without negative effects on dissertation grades. Students' feedback highlighted the benefits of peer supervision as an arena of "multiple brains", and a source of encouragement to move onwards with the dissertation. They found listening to other students' questions, problems and experiences, and engaging in a dialogue with them to be a rich learning experience. The academic contribution of the supervisor as the facilitator of the peer sessions was also much appreciated. Baker and colleagues interpreted the power relationship in group situations to be more neutral than in one-on-one sessions. Some students felt that time allocated for individual supervision was insufficient (19,5%) and requested for increased time allocation (41,5%). The approach proved cost efficient because there was a 45% reduction in required staff time. Baker and colleagues (2014) conclude by recommending group supervision as an option for supporting final-year students working on an evidenced-based practice dissertation.

1.4.9 Faculty experiences and observations

The experiences and observations of dissertation supervisors have been researched at all degree levels. The findings shed light on, firstly, what supervisors consider the stumbling blocks in the student thesis process and, secondly, on the approaches supervisors take or ideally should take to daily advising.

Rowley and Slack (2004, 176–180) state that supervisors play a crucial role in the dissertation process, and therefore call for a more proactive approach to supervisor development to ensure that dissertation experience and outcomes do not deteriorate. Supervisors need to continually develop their ability to understand and support the student's learning process, develop their own subject knowledge, build networks for access, update their skills to use electronic sources, and finetune their knowledge of research methodologies. Students need supervisory support because they may lack the requisite work or life experience and networks to locate a suitable context for their dissertation research. Students also need a structured dissertation experience with planned interim assessments. Supervisors can provide structure in the planning and managing of the timeline of research activities, and in the structuring of the dissertation report. Overall, the undergraduate dissertation supervisor's role is a demanding one. Supervisors should share the student's enthusiasm and help the student realize his potential through, at least, the following potential roles:

- *Subject expertise provider*
- *Provider of access to research contexts*
- *Mentor supporting reflection on process*
- *Director of project management helping student through the process steps*
- *Research methodology advisor*
- *Assisting with access to literature*
- *Editor supporting report writing* (Rowley & Slack 2004, 179.)

The above list clearly reveals what Rowley and Slack (2004) consider the most challenging tasks for the dissertation student.

A hallmark study on faculty views of students' dissertation challenges and, hence, also needs for dissertation supervisors' knowledge and skills was conducted by Todd and colleagues (2006). The study adressed the gap in the literature about the lived experience of undergraduate science and humanities dissertation supervisors through interviews of a self-selected sample of eight supervisors. In the faculty studied, students had the freedom to choose the dissertation topic within the discipline without restrictions. The thematic analysis highlighted the responsibilities and roles the supervisors took in the dissertation process. The supervisors preferred a facilitating style over a directive one, while some also recognized the need for prescriptiveness when called for. Many considered themselves to be flexible in regards to the extent and nature of the support they provided. Many found students struggling to define a research question suitable for the dissertation module requirements (focus, scope, ethical issues, justification), and some considered it their duty to offer one-on-one supervision to help the student forward. Some discouraged students lacking motivation and ability from engaging in field research. Methodologically over-ambitious students were persuaded to cut down the number of interviews planned to ensure manageability. Students also needed supervisors' assistance with time-management, personal organization, work planning and academic writing (specifically, structure, coherence, but also, changing from descriptive to analytical approach, grammar, spelling, presentation, content). Supervisors typically identified errors but did not correct the writing. Some supervisors reported difficulty with setting boundaries, especially with weaker or international students who may have become dependent on the supervisor's assistance. This was a challenge as all supervisors considered the dissertation to be the responsibility of the student. Todd and colleagues (2006) concluded that supervisors considered the dissertation as having significant value as part of degree studies due to the self-directed learning experience it facilitated, and its extended duration and depth. Both students and staff underwent a process of chaos and cosmos, indicating that students, especially, need encouragement and support throughout the process to gain the confidence needed for the dissertation. The supervisor needs to to be sensitive to changing student needs depending on the individual student

and the stage of the dissertation process: substantial (directive, “hands-on”) support is typically needed in the beginning to guide students with finding a focus, utilize methodologies and collect data, wheras later on the students develop a higher level of autonomy and can manage with more of a “background” support. The supervisor needs pass control to the student by putting up with uncertainty and allowing students to also struggle and be challenged without fixing all their problems. More able and motivated students can show their abilities while feeling stimulated and rewarded, whereas those with less ability and motivation have an unpleasant and unsettling dissertation experience. To help supervisors to find the boundaries of their roles, the authors suggested training or, equally effectively, peer networks to share experiences, and self-help guides to the undergraduate dissertation process for students.

Establishing a culture of excellence in dissertation supervision, however, is a challenge for many reasons ranging from established institutional cultures and hourly staff time allocations for supervision to supervisor motivation, commitment, competences and experience in supervision. Brew’s (2001) study provides an illustration of how fundamental differences between supervisors and researchers can be. She developed the first model of its kind describing conceptions of research as expressed in senior researchers’ (n=57) interviews. Four types emerged from the phenomenological analysis: domino conception, layer conception, trading conception and journey conception – defined by the components within structural (what is perceived) and referential (the meaning given to perceptions) dimensions, and by either external or internal orientation and whether the researchers was present in or absent from awareness (for a more detailed description see Brew 2001, 280–282).

Another level of differences emerged in Dysthe’s (2002) analysis of semistructured interviews of Norwegian Master’s students (n=10) and their supervisors (n=24). The analysis revealed three models of supervisory relationship: the teaching model, the partnership model and the apprenticeship model. The teaching model is characterized by the traditional monological way of communication, student’s dependence on the supervisor, and the status difference between the two. The partnership model is based on a more symmetrical and collaborative relationship, where the thesis is seen as a joint project. The supervisor also aims to foster the student’s independent thinking. In the apprenticeship model, the student learns by observing and collaborating on the thesis with the supervisor, who is in an authority position as the expert. This model is typical when the student is part of a research team with a role of his own. Although Brew’s (2002) and Dysthe’s models are based on a stydy of senior researchers and master’s level dissertation processes, I consider the models equally relevant for the undergraduate dissertation processes in focus in the

current study. The scope and depth of learning and research activities is more modest in the bachelor dissertation, but the key problems faced are the same.

Holmberg's (2006) study provides yet another example of supervisor differences. Holmberg (2006) sought to establish what bachelor thesis supervisors perceived to be the key aspects of quality in supervision. Interviews of nine supervisors with doctoral degrees in the field of business administration revealed differences between supervisors in terms of scientific quality, learning quality, societal quality and social quality. The supervisors also had differing criteria for science, and approached the science-practice relationship from different perspectives. Their understanding of the supervisor's social role varied from an educator of researchers to a trainer of consultants, and from a strict approach to a highly supportive approach to students. Holmberg concluded that the supervisors failed to understand how differently they undertook their roles as supervisors, primarily, because they did not share a common theoretical frame of reference. Since they did not discuss their supervision practices, possible challenges caused by these different understandings of the supervisor's task went unrecognized. Holmberg proposed that in organizations with a single rationality reduction of supervisor variation is advangageous, while in organizations with multiple rationalities developing an understanding and acceptance of such differences is important.

Differences between supervisors can also impact graduation times. Armstrong (2004) surveyed supervisor-undergraduate student dyads (n=118 dyads) in a final year dissertation process in a UK business school. He delved deeper into the reasons why in several countries for decades even up to 50% of graduate and PG students fail to complete their dissertation, while graduation is delayed for many others. The findings indicated that the more analytic the supervisors were on the cognitive style dimension analytic-intuitive, the higher students perceived the quality of supervision to be, and the higher their dissertation grades. Analytic supervisors' cognitive and working style was reflective, logical and serial. Interestingly the student's own cognitive style did not need to match that of the advisor to attain these positive gains. Armstrong (2004) recommended that the dominant cognitive style of supervision teams should be analytic, intuitive supervisors should receive awareness training to better serve their students' needs, and intuitive students should be matched with analytic supervisors. The study has special relevance for the current study as it is in the field of business and at the level of UR resulting in a 10 000 word dissertation aimed to solve authentic business problems for case organizations found by students themselves.

Dysthe, Samara and Westrheim (2006) go further into the phenomenon. They start from the premise that the traditional monologic supervision taking place in an individualized supervisor-student relationship working as a dyad is inadequate because of its vulnerability. It often results in

overdependence on the supervisor and lack of student ownership in his own thesis. Problems can also emerge because of a personality mismatch, and difficulties balancing authority and independence. This individualistic research tradition stressing the autonomy of the researcher and focus on one's own research project is still strong, however. More recent approaches to learning build on sociocultural views of knowledge in the form of student participation in communities of practice that engage everyone through dialogism.16 Dysthe and colleagues (2006) applied these and tested a three-pronged approach to supervision, where collective forms of supervision (student colloquia and supervision groups) and individual supervision were combined to support Master's students writing their dissertations. Student colloquia were 5–6 person student groups meeting weekly to discuss literature, their tasks and own texts in a process of peer collaboration. Supervision groups consisted of the same students with the addition of 1–2 supervisors. The focus was on process writing with 2–3 students sharing texts in each session to receive peer and supervisor feedback and comments. Individual supervision was done in the traditional dyadic relationship to support the student individually and to ensure the norms of disciplinary discourse. The findings indicated that the combination of three arenas supported the students' research and thesis writing process very well. Firstly, student colloquia provided an emotional arena to discuss experiences, vent frustrations and talk about problems. Secondly, groups supervision was a forum for enculturating the students into disciplinary discourse by engaging them in a community of practice as legitimate peripheral participants. Students were able to participate in a multivoiced discussion and co-construct knowledge. As a result, students experienced these collective supervision situations useful. They were especially surprised by the contributions reading and commenting on others' texts made to their own thesis process. For collective supervision to work, regular attendance, mutual obligation, structure and clear rules were found to be of the essence. Finally, individual supervision provided quality assurance to students' research process and thesis writing.

Jaldemark and Lindberg's (2013) 10-week technology-mediated undergraduate dissertation course followed a similar concept in that it relied on a – rather complex – structured work process with several deadlines, and in-class and on-line dialogues aimed at building a learning community to support student's learning and formative peer-assessment.

Another way to model the interactions and learning in the dissertation process comes from Marinkovich and Salazar's (2011) study. They applied grounded theory method to establish the

16 The authors build on dialogism through Bakhtin, M. M. 1981. The dialogic imagination: four essays by M. M. Bakhtin. And Bakhtin, M. M. 1986. Speech genres and other late essays. Sociocultural perspective is based on Lave, J. & Wenger, E. 1991. Situated learning: legitimate peripheral participation. And Wenger, E. 1998. Communities of practice: learning, meaning, and identity.

social representations professors held about the bachelor thesis writing process in a history program. The emerging theory contained two axes: the dialogue between the actors in the thesis writing process, and the resourcefulness in developing skills in the genre of thesis writing. The emerging theory visualized the academic writing competency as developing within a discursive community in the collaboration between the professor and the student. Their collaboration was a process where the professor monitored the student through three recursive stages: problematization, access to sources, and the writing process. (Marinkovich & Salazar 2011, 85, 100.)

Roth's (2009) model goes even further to overcome the theory-praxis gap that many master's and doctoral students' suffer from by utilizing his apprentice-based praxis of method approach. He developed it as an alternative to the two traditional, but problematic, forms of learning research. Firstly, discovery learning, where the student is told to find out how to conduct a research into a substantive phenomenon of interest without actually possessing the requisite methodological knowledge; secondly, information processing, where student is first taught in research methods courses, and then told to complete a research – with the result, that they go into the process with only a theoretical understanding of methods, thus, often choosing the method before the phenomenon. The praxis of method approach aims to resolve this paradox by allowing students to learn to do research in an authentic context by doing research together with the teacher as part of a research group – a community of practice. Roth (2009) claims that there is a number essential of modes of both thinking and doing that are best learned through participation in praxis where each participant changes and is changed by the research culture at hand. In the context of a Finnish UAS bachelor thesis, this type of approach is very challenging to implement, but pedagogy is moving in this direction through larger staff coordinated research projects.

The above studies have focused mainly on the lack of student competences, life and work experience, and, subsequently, and on how faculty can support students through the rocks and shallows of the dissertation experience. The analysis can go deeper still into the student's psyche, and the deeper one goes, the more challenging it is for a teacher or supervisor to support the student through a course or dissertation process, and, the more emotional work is involved. Good examples of this research focus are Onwuegbuzie and colleagues' (2003; 2004) work on statistics anxiety and Papanastasiou and Zembylas (2008) work on the wider concept of research anxiety. Onwuegbuzie and Wilson's (2003, 196–199) divide statistics anxiety into situational, dispositional and environmental components. Situational antecedents are factors surrounding the stimulus, such as, prior knowledge of statistics, statistics course grade, the status of the course as required or elective, and student's major. Dispositional antecedents are factors that the individual himself

individual brings, such as mathematics self-concept and level of self-esteem. Environmental antecedents refer to events which occurred in the past and factors such as gender, age, race and student type, and learning styles. Some of the many effects of the anxiety were explored in a further study. A survey of graduate students from education disciplines (n=135) showed that 40–60% of students nearly always or always procrastinated on writing a term paper, studying for examinations, and doing reading assignments (Onwuegbuzie 2004, 6, 11–12). Undergraduate students can have negative attitudes towards research, experience research as difficult and still consider research useful in their profession (Papanathasiou & Zembylas 2008, 161-162).

Specific situations are more aanxiety-arousing than others: such as, an exam in research or do a pop quiz in a research course (Bolin, GlenMaye, Lee & Yoon 2012, 233) or engaging in large unstructured group discussions (Kapp 2006, 66). Master's level URE students may underestimate the demands of a URE, and, as a result, experience the process as highly stressful with "unexpectedly high workload, time pressures, intense learning processes, the difference and challenges of self-directed learning, and the variable level of academic support and access" (Desbrow, Leveritt & Palmer 2014, 57, 60–62). Yet, the same 25 dietetics master's graduates felt a strong senser of achievement, produced research outputs and reported having developed resaerch competences and gained competitive advantage.

From the faculty viewpoint students exhibit attitudinal and emotional problems, and/or lack the competences required to engage in the dissertation process effectively. Valarino and Yaber O (2002) describe "All But Research Syndrome" (ABR) as a typical problem of theses and dissertation students in many countries. ABR is defined as: "the group of problems, impediments, obstacles, attitudes, feelings and inadequate behaviors, skills deficiencies or lack of knowledge, faced by students, faculty and professionals, when they approach the task of designing, planning, developing, writing, supervising, and publishing research or long-term project reports" (Valarino 1994, 153, quoted in Valarino & Yaber O 2002, 64.). The symptoms of ABR "include (a) difficulties structuring time for tasks and their completion; (b) procrastination; (c) isolation; (f) focus on external control; (e) low academic self-esteem; (f) weak personality; and (g) difficulty thinking creating and writing" (Valarino 1997 quoted in Valarino & Yaber O 2002, 64). The ABR includes the challenge of writer's block, whose symptoms include fear of criticism; fear of failure; perfectionism; procrastination; neuroticism; addiction to rigid and non-functional rules; bad working habits; impatience; inadequate cognitions and self-verbalizations; lack of drive for writing; aversion to write; deficiency of writing skills; and difficulties in creating and being original (Valarino & Yaber O 2002, 66–73). Research topic and problem definition stage is listed

as specifically challenging because researchers tend to experience fear and anxiety about failing to be original, and about someone copying their ideas.

1.4.10 Summing up the international literature

The many studies and recommendations in this chapter could perhaps best be summarized by thematizing the challenges of dissertation experience and supervision. Research as proven time and again that bachelor's students irrespective of the discipline are often motivationally, cognitively and emotionally unprepared for the dissertation process whether viewed through student experience or faculty experience. Due to deficient knowledge, skills and competences, they then experience many difficulties. Not feeling up to the task generates negative emotions and attitudes that may be hard to rework. Repeated difficulties can demotivate. And, so the vicious wheel develops and spins. Faculty can and should take action to improve the situation. Firstly, research, development and innovation competences are today a metaskill that should be embedded throughout the curriculum. In the first two to three semesters students should learn to appreciate the need for RDI skills in the working life and the academia, and develop a basic – perhaps only theoretical – understanding of the what and how, if practical research tasks are too difficult to implement. In the following semesters students should be engaged in authentic small RDI activities to facilitate application and expansion of the theoretical learning. Secondly, in comparing the pedagogical recommendations of, for example, Todd and colleagues (2004), Dysthe and colleagues (2006), and Jaldemark and Lindberg (2013), it becomes evident that the dissertation supervisor himself must balance between the dysfunctions of offering too little support and offering too much support to a student who, in most cases, needs varying kinds and levels of support. Supervision should allow the student what I would title "scaffolded autonomy" in relation to the supervisor. Thirdly, relying on sociocultural theories and dialogism in the dissertation process (e.g. Dysthe *et al.* 2006) sets high demands on both supervisors' and students' time, and their interaction, communication and feedbacking skills. The challenge here lies in finding the optimal balance between the traditional individual dissertation work and the more up-to-date social learning activities so that students experience peer dialogues as useful and relevant to their own dissertation process. This is the condition for active student engagement. Lastly**,** and most crucially, the dissertation supervision competences of faculty may require targeted development interventions. A student lost in the dissertation process may lack some of the most rudimentary research skills. Only a competent supervisor knowledgeable both of the challenges students face

and of the pedagogic alternatives available to support the students is properly placed to offer high quality supervision.

1.4.11 Finnish studies on the UAS bachelor thesis

International studies on the bachelor dissertation are an important point of departure as we have seen above. As this study takes place in the context of Finnish UAS system, we need to also review studies on UAS students and faculty in Finland. This is the focus of the current chapter.

The UAS thesis in one form or another has been the focus of much academic literature and research in Finland since the late 1990s after the first UAS bachelor theses had been published. The role of the thesis in the national RDI system was already covered (chapter 1.2). In this chapter, the spotlight is turned on the integration of thesis and work placements, the tripartite process where the thesis can best deliver its benefits to the national RDI system, competences the thesis process develops, and the experiences of thesis students.

The integration of the two statutory curricular components, thesis and work placement17 has been called for both in UAS strategies (Hyrkkänen & Siitonen 2011, 97–98) and by the academia (Frilander-Paavilainen 2007, 129; all articles in Siitonen 2011; Toljamo & Isohanni 2007, 298). The goal is to facilitate for the student an extended working relationship within one company's authentic working environment and community of practice; which, in turn, leads to improved learning and innovation opportunities for all parties (Hyrkkänen 2011, 12, 16). A research project in Turku UAS mapped out the thesis–work placement integration models used in its various faculties. A total of seven types were discovered:

- *Moving from the work placement onwards to doing the thesis in the same organization.*
- *Moving from the thesis onwards to complete the work placement in the same organization.*
- *Compiling an article or portfolio thesis from writings done during work-placements.*
- *Completing both the thesis and and the work placement:*
    - *in a UAS's RDI project.*
    - *in a research workshop*[18].
    - *as part of the UAS's for-profit operations.*
    - *in The UAS's formal contracted collaboration partner.*

(Hyrkkänen & Siitonen 2011, 99–102.)

[17] In the Finnish context the term 'work placement' commonly refers to work experience that is required as part of degree studies (30 cr minimum depending on the degree). The internationally more common term 'internship' is usually reserved for working organizations' own placement systems.

[18] More on this specific method of working in Jolkkonen, Lehtonen & Kanerva-Lehto 2006.

This kind of integration works best through a tripartite partnership, but such partnerships between the UAS, the student and the working life organization are a complex phenomenon to establish and manage. Leinonen (2006, 109) states that "[t]hesis can be understood as a collaboration process that produces learning for different actors. Succeeding in this process is most dependent on collaboration during the thesis process". Although there are many challenges, collaboration is well worth the investment. All parties can benefit from the emergence of new information and the developmental transfer effect that emerges from the multivoice dialogue between the partners (Vanhanen-Nuutinen, Helenius, Järvinen, Lumme, Pöyhönen, Soine-Rajanummi, Spets, Taajamo & Lambert 2006, 243–244).[19] In short, there is great potential for all parties to learn and innovate work processes and work products (Frilander-Paavilainen 2005, 142; Hyrkkänen 2011, 13–15; Leinonen 2006, 121; Rissanen 2003 18–19).

Various partnership management models at varying levels of analysis have been suggested to ease the collaboration process (e.g. Jallinoja 2012, 255, Peisa 2010, 36–66; Vanhanen-Nuutinen et al. 2006; Venninen & Laela 2006). The model by Häggman-Laitila, Rekola, Marjamäki-Kekki, Harra, Immonen and Reijonen (2013, 19– 48) views the partnership process holistically from a long term viewpoint building on the organizational realities at many levels. The basis for the collaboration is formed by shared development targets, collaboration agreements, resourcing plans, mutual commitment and understanding, shared operational cultures, participatory change management and efficient communication. These essentials provide the groundwork on which to plan the partnership on the strategic level, and flowing from there down to tactical and operational levels. The benefits that emerge from the partnership include improved recognition of collaboration opportunities, new partnerships, development of shared operational procedures, development and exchange of expertise, improved student advising and recruitment and improved personnel recruitment, mentoring and career management. Kotila and Peisa (2008, 63–67) categorized collaboration strategies into traditional collaboration strategies (course based, work placement based and thesis based), professional growth and study path strategies (degree programs supporting formal education with partners, study paths building specific expertise areas), and entrepreneurship and organizational development strategies (network based learning, RDI development projects). From the viewpoint of this study, the working life connection is focused on the way students find, negotiate, contract and collaborate in commissioned thesis projects with working life organizations in the planning stage of the thesis in one metropolitan region UAS.

[19] For a discussion on the quality of the thesis process, and how it can be analyzed from the perspectives of the three partners at the level of process and its outcomes, see Jolkkonen 2007.

The role of the faculty as guardians of students learning and informers of work life organizations in the tripartite process is central. Yet, research shows that teachers often fail to step into this role, which results in unclear thesis objectives and thesis process. In spite of this, all three parties agree on, and, specifically, working life stresses the importance of, collaboration and networking to establish true collaboration and sharing. Thus, the process should be organized to encourage the students to discuss, critique and interpret each others' work in peer groups, and with faculty and working life organizations. Through this the student learns both individual and communal expertise during the thesis process. (Frilander-Paavilainen 2005, 164–176.)

The role of the working life thesis advisor is also crucial. The thesis student's learning in the workplace is dependent also on the way the the workplace representative approaches the advising. Frilander-Paavilainen (2007, 112–114 referring to Hakkarainen, Palonen & Paavola 2002; Scardamalia & Bereiter 2002; Tynjälä 2004) analyzes this phenomenon on three necessary interacting levels. Firstly, the workplace advisor can approach learning as a phenomenon occurring at the individual level with focus on knowledge components in the cognition of one person. Secondly, the approach can be communal and contextual with focus on the student as one actor in the social system of the workplace. Here the student is collaborating with and receiving support from organizational representatives. Lastly, the approach can offer the student the opportunity to work as a fully-fledged member in the organizational community of practice with focus on sharing in the building of knowledge and competences. Artificial institutional barriers between the student and the working place disappear and border-crossings enrich the learning process. Ideally, the faculty is participating in the process.

The way the working organization perceives the purpose of the thesis, the role of the student, the utility of methods and the knowledge objectives of the thesis process influences the conduciveness of the learning environment the working life organization offers the student. In her doctoral dissertation Rissanen (2003, 21, 25–27) interviewed thesis students in the faculty of business (n=9) and working life representatives advising the theses (n=10) to establish the purpose of working life based theses, the meaning of the term working life based, the competences developed by students during the thesis process, and the learnings generated in the working life context. Working life representatives' responses about the function of the thesis were categorized into three modes; each of which influenced how the student was received by the organization, and how well the student and the thesis was integrated into organizational activities. If the thesis was seen to be a developmental process where both the student and the working life learned together, the student was hailed as an equal partner in organizational development and research. If the company viewed the thesis as a piece of consultancy research, the relationship between the

organization and student was similar to the more distant relationship of a client to a consultant. When the thesis was perceived narrowly as merely a required part of the student's degree studies, the student was viewed as an outsider, and integration of the student and the thesis into organizational activities was tenuous or non-existent. As a consequence, the relationship was also the least fruitful one for both parties. These three relationship modes had a direct impact on the quality of the learning environment the working life organization provided: at best, one of dialogue where the student was positioned as a co-worker and collaborator in the organizational community of practice, and, at worst, one of supervision where the student was laboring on his thesis alone. The nature of knowledge, and the student's and organization's expectations of the type of knowledge the thesis generated follow the logic above. At the richest level, the thesis process facilitated cocreation of new professional knowledge at the level of experience, propositions, procedures and silent knowledge. Alternatively, the student focused on existing propositional and procedural knowledge that could be applied instrumentally to further organizational development goals. At the most superficial level, the student on his own sought and organized existing information on a specific topic requested by the organization. Companies also interpreted the role of methods in the thesis process in ways that mirror the logic above. When methods were used to generate new professional knowledge, they were actively utilized as problem-solving tools that required a shared reflective process. All types of knowledge were viewed holistically as professional knowledge. Alternatively, methods were viewed more narrowly as a method to produce and verify information. In this case, the focus was on the accuracy and applicability of the information for organizational needs. At the shallowest, information was divided into two opposing camps: theoretical and practical. The different ways of perceiving the function of the thesis, and the nature knowledge and methods in the thesis process bore on the student's work process and learning outcomes. At best, students were working in an autonomously self-directed and reflective manner learning shared problem solving, and jointly creating new knowledge and experiences in the context of the organization. At worst, students were following instructions learning from action and evaluating only their own experiences. (Rissanen 2003, 47–56, 73–84, 134–144, 105–114, 191–193, 219–227.)

The reason for the importance of the tripartite collaboration in the thesis process can also be viewed from the viewpoint of student competences. Faculty and academia suggest that students develop and deepen many competences. These include a planned and methodical way of working, goal orientation, information search and information reading skills, ability to gather and synergize research results, ability to produce legible and understandable text and reports (Toljamo & Ihohanni 2007, 298); self-directedness, complex problem-learning skills, collaboration skills,

metaskills and skills to process and utilize information (Frilander-Paavilainen 2005, 74–85). Worklife representatives list innovative competence, metaskills, working life skills, investigative problem-solving, and oral and written communication skills, specifically, expressing one's own opinions. (Frilander-Paavilainen 2005, 85–94). From the students' viewpoint, the skills that develop are: working life skills (Ylönen 2005, 19), self-directedness, professional planning and control, metaskills and application of information, and completing a given task (Frilander-Paavilainen 2005, 65– 66). Students view the connection to and participation in authentic work crucial for developing this expertise (Frilander-Paavilainen 2005, 70; Ylönen 2005, 17).

To find out what types of competences the thesis process helps develop, Mäenpää (2014) used content analysis to study theses reports (n=13) and development project reports (n=14) from a Finnish UAS nursing program. The analysis focused on the professional competences students described as having developed in the self-assessment sections of their reports. The findings indicated growth in individual and communal competences (cf. Frilander-Paavilainen 2005, 164–176.). Students deepened the scope and depth of their professional knowledge base, and improved their abilities in independent working, interaction and collaboration with various stakeholders, the search and critical evaluation of source literature, research competences, application of knowledge, argumentation through literature, planning and working in an organized manner, remaining patient and managing stress. Students experienced collaboration with working life partners as motivating, felt it contributed to professional growth and helped internalize the nursing profession. Students experienced difficulties, however, trying to fit together the wishes of all stakeholders, to match multiple schedules and to manage varying levels of commitment. Mäenpää concluded that collaborating on theses with working life is an important part of students' professional learning and development, but collaboration forms still need further development. Working life organizations also benefit from this in the form of motivated development-oriented future employees.

After examining the tripartite partnership and competences developed in the thesis process, let's now move on to the students' experiences of the thesis process in the UAS. Kilpiäinen (2003, 77, 127–128) investigated healthcare students' (n=97) perceptions and experiences of research-type activities during their studies through group interviews, individual and group essays, and an open questionnaire. The findings indicated that students' understanding of the philosophy of research in terms of ontological and epistemological issues was quite deficient and vague. Teleologically they could, however, relate usefulness of research to its ability to solve practical working life problems. Students themselves experienced research tuition to be too abstract. Kilpiäinen's interpretation of these results was that the lack of ontological understanding can add

to the problems students experience trying to understand other research-type activities. While students did not find fault in themselves in terms of research tuition and thesis advising, they did question thesis advisors' knowledge of science and competence to advise theses. Often the problems were related directly to the person of the advisor. The advising provision was described as uninformative, one-sided and rigid and critiqued for lack of creativity and critical approach.

In her doctoral dissertation, Frilander-Paavilainen (2005) used surveys (student n=92, faculty n=23) and thematic interviews (faculty n=23, working life representatives n=31) to investigate the development of expertise in the bachelor thesis from the viewpoint of students, teaching staff and work life representatives. Students felt that the expertise the bachelor thesis is designed to develop should be evaluated, revised and then communicated. They were motivated to work at a higher education level at the edge of their own current competence to develop modern expertise. Importantly, many felt that thesis goals were set too low and criteria should be rethought. Both students and teachers felt that the statutory responsibility to meet the work life collaboration requirement was often placed, unfairly and unreasonably, on the students' shoulders. Yet faculty typically left the student alone to look for the thesis topic from working life without much advising. Students expressed a need for special support in the first stages of the thesis process where thesis objective and thesis tasks are set. Also searching for literature, handling the theoretical framework, learning analysis methods and critical evaluation of own work were considered areas of personal weakness. This was made more challenging by the companies' lack of understanding of the learning objectives of the thesis and the statutory goals around worklife collaboration. In terms of practical worklife collaboration, students noted that when companies focus one-sidedly on their business/organizational needs, this makes it difficult to integrate their personal learning goals and those of the degree program into the thesis. Worklife advisors received positive feedback for encouraging students to ask questions and replying to questions when asked. Best worklife advisors were easy to work with, eager to support and gave expert advice. Both worklife and faculty advisors where considered to be experts in their fields. Their advising was experienced as equal, balanced, flexible and encouraging. Faculty advisors were, however, criticized for teacher-centredness and for lacking commitment in helping the student find a thesis topic, giving thesis advising and collaborating with work life. All parties agreed that tripartite dialogue is needed to facilitate shared understandings and smoother thesis process. (Frilander-Paavilainen 2005, 72, 137–138, 141,161–170). This study is a rich source of information on the thesis process from the tripartite viewpoint and gives students a clear voice. The following study is another insightful piece of research that highlights many improvement areas not mentioned in other studies. Student voice is also clearly heard.

In his licenciate dissertation, Leinonen (2001, 147–149, 153–157) surveyed nursing students' (n=159) opinions on the UAS thesis and the thesis advising process. The findings indicated that the typical study method was independent study (82%, quite to very useful). Here my attention is drawn to the other proven and effective study modes that were utilized much less: reading existing research and theses, discussing with peers, following the instructions of peers or of the thesis advisor. This means that collaborative modes were in the minority, although students reported that discussions with others helped them "tune in" to thesis work. In response to the question how thesis working took place at best, students reported four approaches: by recognizing failures and successes, by planning in advance, by doing, by thinking and by interacting with others. Individual thesis advising (94%) as well as shared seminars 81% were both considered quite to very useful. Shared seminars facilitated getting feedback on one's work and so also clarified matters for the the writer. Lectures and reading of examination material was also mentioned as a worthy study mode (c. 66%). Presenting one's thesis gave conflicting results: it was quite useful to very useful for 52% and useless for 16%.

The main two areas where students experienced difficulties were thematized into student's own competences (24 items) and the thesis itself (117). Students experienced as problematic their lack of competences in process thinking, planning and ICT, challenges with work division in two-person theses, and the fact that challenges kept cropping up. Some also mentioned logical and systematic thinking as a challenge. The thesis itself had the most problematic areas from the students' perspective. These included selecting and demarkating a topic, planning and demarkating the theoretical framework, finding source material, writing down the research questions, method issues, planning data collection activities, working with data and analyzing it, reporting and interpreting the results, writing the discussion and the conclusions chapters, starting the writing process and producing text. These were also areas that students needed or would have needed most advising in. Demarkation difficulties arose from the demands of the case company, student's own motivational profile and scheduling issues. Demarkation needed to be examined from several perspectives to finalize it. An unsuccessful demarkation resulted in problems with writing the theoretical framework. Students' goals for the thesis included graduation (74%), learning to do a thesis (86%), developing expertise (73%), producing information new to oneself (70%), and intellectual development (73%). Many (84%) felt that their goals had been met to at least some degree. Students reported learning most about handling and analyzing data, data collection method planning and collection, and reporting and interpreting results. Students themselves felt they learned most about data handling and analysis, demarkating and designing theoretical frameworks, writing and data collection planning and implementation. Student's overall satisfaction with the

thesis process was high with 85% quite to very satisfied. Being able to choose one's thesis advisor was considered useful (84%). When choosing advisors, students' key criteria were advisor's expertise, shared interests, earlier collaboration with the teacher and advisor's personal characteristics. Students expected advising to be targeted both to "me as a learner" and the thesis. Both of these had process and outcomes as subtargets. In the advising relationship students apprized most the advisor's encouragement, matter of factness, empathy, enthusiasm and comradery, criticality, demandingness, sense of humor, warmth and impulsivity. Students prioritized the advisor's roles as a teacher, an encourager, a collaboration partner, advisor and expert. Leinonen (2001, 158–177, 183, 186, 188.) Examining the advising relationship characteristics and the advisor characteristics shows that students place much value on socioemotional issues.

Since the above study is the one closest to the topic at hand in this report, it was here covered in more detail than usual, although many fascinating results have to go unreported. I warmly recommend that the reader review the study himself. An analytical point where I disagree with Leinonen's (2001, 158) insightful analysis is the division of problems into student competency and thesis related categories. In my own analysis I approach this from a different perspective: if the student does not have the cognitive competency to engage in the activities Leinonen lists as thesis related problems (e.g. demarkation of topic and theoretical framework), then surely, logically, it is the student's competency that is lacking. The thesis itself cannot "present" problems or be a problem in this process as it is the inanimate target of the student's activities. Rather the question is the adequacy of the curriculum and the resultant student's expertise: if the student does not have the opportunity to develop the competences during his studies, one has to ask whether the curriculum and pedagogic approaches used should have facilitated better the learning of the requisite skills for the thesis. If they do not, student's will find their competences falling short. I fully agree with Leinonen's (2001, 205) opinion that if the thesis advising relationship is focused on thesis structures rather than the development of wider expertise, then something is amiss.

In another study Leinonen (2006, 111–112, 117–125) used a multimethod approach to investigate the thesis process in the various educational fields in Kajaani UAS. He interviewed staff (n=10) and students with completed thesis (n=8), and surveyed student groups starting their thesis and groups graduating (n=53 groups). Additionally, he observed thesis presentations (n=18). The results indicated that students experienced seminars to be useful events, where they could learn from other students' theses and receive peer support and critical comments on their thesis drafts. Although Heinonen considers presentation seminars the climax of the thesis process, he also critiqued them for failure to go beyond structural and linguistic comments to substance, for lack of

real dialogue and inability to activate the audience. Students were also content with thesis advising given by faculty. It had served their needs flexibly and advising was available when needed. Leinonen critiqued, however, the institutional advising arrangements for the failure to organize tripartite advising meetings and for leaving the student alone to liaise with the working life representatives. Additionally, he called for new advising models to support the traditional one-on-one thesis advising sessions. New models could bring cross-disciplinary dialogue and challenge students to actively engage through their expertise also when they are not presenting their own work. Theses completed across degree programs were also encouraged. To ensure the utilization of the results of thesis projects, Heinonen suggested that UASs integrate the thesis into the teaching process, communicate more effectively about theses, and develop their publication processes. Worklife utilization of thesis results could be developed through long term working life collaboration and partnerships

Although peer process design and management is a complex and challenging task with many delicate interactional issues to consider, the benefits make it well worth while. In his doctoral dissertation, Leinonen (2012) delved deeper into peer processes – focusing this time on UAS health and sports students' (n=96) experiences of peer support through a survey and students' writings on peer situations. Findings indicated that peer collaboration can help produce important new skills, such as, taking turns listening, dialogical competence, peer competence, communal dialogue and mutual trust, self-regulation in learning. Interestingly, students learned from their peers even when the peer lacked substance specific knowledge base as long as the situation was approached as collaborative and shared. The process relied on the participants' competences in setting shared goals, engaging in communal dialogue and trusting each other. This required that students learned the role of the peer and the ways to utilize peer situations. (Leinonen 2012, 482, 485, 524).20

Pehkonen and Kauranen (2012, 2, 23–24) analysed student thesis feedback system statistics (n=171) at Saimaa UAS. The majority reported that the thesis process in the different faculties supported the student well. It could be characterized as well planned and well organized whole with encouraging and supportive thesis advisors. Student suggestions for development covered: the topic selection stage; unclear and hard-to-find guidelines that are not necessarily up-to-date; orientation of the student to the thesis process through more studies in research, data collection and data analysis; the timing of the process; and the lack of alignment of practices with written guidelines. Topic choice was experienced as difficult, which often led to delaying starting the

[20] For an interesting discussion on the concepts in peer advising and one well-tested model used in Kajaani UAS, see Ketola 2007.

thesis. Students requested for earlier start for the thesis process, and more advice and support with the topic selection stage. The latter could be improved through thesis topic –seminars and tighter collaboration with business.

Ylönen (2005) studied the thesis experiences of physiotherapy students (n=4) as part of her UAS teaching diploma studies. Results indicated three key areas. Firstly, students stressed the importance of faculty advisors' support in the thesis planning stage. Collaboration on defining the thesis objectives and research design was highlighted. Ylönen warned that lack of support at this stage could lead to lowered motivation, perceptions of poor advising provision and lack of depth in the thesis learning experience. Secondly, students felt that their motivation was high and their expertise developed best when they had the opportunity to feel challenged by authentic problems in authentic worklife practice. Internal motivation to learn through the thesis process was high. They also considered it important that their thesis results should be usable, and that the company actually utilize them. Thirdly, students felt that work life skills developed best through social interaction in the work place. (Ylönen 2005, 22–23.)

The thesis clinic has proved successful as a learning method that combines teaching, advising and active work on the thesis on a regular basis. Vesterinen (2003) investigated how thesis clinics impacted the methodological and professional competences of business students as well as their graduation times. She triangulated her data from thematic interviews, a survey and participant observation of clinic students (n=43) and clinic staff (n=7). Students reported many gains. The most important ones were the abilities to define the research question and investigative questions, to design and utilize the theoretical framework, to conceive of the overall structure of the thesis and to select a suitable research method. Those who attended the clinic actively also reported improved competences in empirical implementation, data processing and analysis, presentation of results and evaluation of the completed thesis. Team advising was perceived as useful as it facilitated continuous progress in the thesis process and the reporting of it, while the situational learning approach made it easier to understand and apply methods in one's own thesis. The individual advising offered on the side was also experienced as important especially in content related questions. Also the faculty viewed the clinics as beneficial. They observed improved thesis quality in terms of substance, methodological and structural quality. Collaborative learning facilitated increased student motivation and group spirit, and improved learning results. In terms of graduation times, the clinic hastened the thesis process by about half a year. As a result, students graduated earlier.

In summing up this chapter, it is useful to compare the results from international studies (1.4.8) with the Finnish ones reviewed in the current chapter. All in all, the results are quite similar

and the summary presented in 1.4.8 applies. There is one notable difference, however, that arises from a special characteristic of a Finnish UAS thesis. The tripartite collaboration that both national educational policies and national RDI policies place at the heart of the dissertation creates a unique challenge for the student. These challenges related to the commissioning companies are not explored or discussed even at a theoretical level in the international literature. Yet, in the Finnish context, they form one key obstacle in the student's path to a completed thesis.

1.4.12 Conclusions on the literature review – The gap in the literature

This chapter focuses on locating the research gap in the literature both from substantive and methodological perspectives, and, thereby indicates the place this study takes in the research pedagogic literature. The focus is placed first on the international arena and thereafter on the Finnish context.

International research on student experiences of research methods courses and bachelors' dissertations

International research has shown that ABR-type of student behavior (Valarino & Yaber O 2002), research difficulties (Head & Eisenberg 2010), and periods of chaos and cosmos (Todd *et al.* 2006) in the dissertation stage should not come as a surprise to faculty – considering that the same ABR symptoms are visible in the findings of many research course (chapter 1.4.5) and URE studies (chapter 1.4.6) whether the respondents are students undergoing the process, or faculty observing the students in the process. In general, students tend to experience research difficulties in many of the phases of a standard research process (Head 2008, 433, 437; Head & Eisenberg 2010, 26). It seems that the ABR syndrome and research difficulties exist during the studies long before the dissertation begins, and should be dealt with well before the dissertation stage to facilitate a meaningful and purposeful dissertation process.

There has been a good amount of international research into UG students' experience of the dissertation or "the dissertation journey" as it is aptly titled by Todd and colleagues (2006, 161). Although students may consider it "a capstone opportunity" for autonomous learning and studying a topic of personal interest from scratch to achieve something (Malcolm 2012, 572–573), and an authentic learning method resulting in the achievement of a dissertation (Todd *et al.* 2004, 345), many still fail to see the importance and usefulness of research, and, consequently, the relevance of research courses (GlenMaye *et al.* 2012, 233; Halcomb & Peters 2009, 69) – in spite of the

pedagogic improvements tested in so many of the studies reviewed. The overwhelming majority of studies reveals that students experience uncertainty, competence gaps and anxiety during the dissertation journey (Desbrow *et al.* 2014; Greenbank & Penketh 2014; Heinze & Heinze 2009; Onwuegbuzie *et al.* 2003, 2004; Todd *et al.* 2004; Onwuegbuzie & Wilson 2003; Papanastasiou & Zembylas 2008). Dissertation candidates are in danger of getting "stuck a liminal space […] characterized by anxiety, stress, struggle and high emotion", and, while many eventually experience a rewarding transition" (Ross *et al.* 2011, 25) so that "ignorance and naivety at the outset is subverted by experience" (Malcolm 2012, 571), there is no denying that many are oscillating in liminal space/territory (Ross *et al.* 2011, 25).

Due to these well-documented challenges, students need many types of faculty assistance. UG supervision needs further research (Derounian 2011). New pedagogic approaches are needed, such as, moving from the focus on individual supervision to research pedagogies utilizing sociocultural approaches (Baker *et al.* 2014; Dysthe *et al.* 2006) and exploring effective supervisory styles (Armstrong 2004). The phenomenon of stuckness could also be conceptualized through Vygotski's zone of proximal development (ZPD). It appears that students sorely need cognitive scaffolding to develop what it takes to conduct a skilled RDI process. Leinonen (2001, 223) also suggests the application of the concept to the thesis process. Additionally, the emotional challenges reported indicate that students also need, what I would call, emotional scaffolding in the management of the typical emotional challenges – both ups and downs – that take place during a longer research venture, such as, the dissertation. Overall, in light of the literature, the range of UG student experience of the dissertation process appears to be a wide one with many different qualifiers that faculty can and should actively tackle.

The first stages of the dissertation, especially the topic selection, may to some students appear as a facilitative experience, while faculty identifies it as intellectual threshold (Malcolm 2012, 571). Research has identified the first stages as a "groping stage" (Tan 2007, 207), where students are at a loss how to proceed. In the context of this study, it is worthy of note that the topic selection phase or groping stage has not been the sole focus of any prior international study. It is here that the gap in the English research pedagogic literature lies. The first stage of dissertation process is therefore worthy of its own study. In general, more research into the lived experience of student's dissertation process has been called for (Heinze & Heinze 2009, 304; Todd *et al.* 2004, 337; Turner *etl al.* 2008, 200). Specifically, researching dissertation students' experiences at different levels of education from UG to doctoral needs more attention, because, while some similarities in the experiences at different degree levels can be assumed, there will also be differences due to the contrasting "intellectual demands and time frames" (Anderson, Day &

McLaughlin 2008, 33). The latter authors also highlight the modest amount of academic reseach focused on dissertation experiences of professional master's degree students.

From the methodological viewpoint, surprisingly, the only GT study abroad or in Finland even close to the the phenomenon in focus in this study has been done by Marinkovich and Salazar (2011). Their aim was to establish the social representations faculty held about the bachelor thesis writing process in a history program. Thus, GT studies into student dissertation experience do not exist. Methodologically, GT lends itself excellently to investigating the experiential aspect of human life. Additionally, as a new way to research the phenomenon, GT has the potential to yield new insights. This study aims to fill this methodological gap also.

Finnish research on the UAS bachelor thesis

Finnish research into the UAS bachelor thesis shares with the international literature the foci on student and faculty experiences, and the development of more effective learning processes through collaborative learning. But there are also additional research foci that we briefly look into later in this chapter.

Research into student experiences of the UAS bachelor thesis process creates a complex and partially contradictory image. Students set practical goals for the thesis, including, graduation, learning to do a thesis, developing expertise, producing new information to oneself, and intellectual development (Leinonen 2001, 161–163). Students have also experienced the authentic working life context and working life advisors important for developing expertise (Frilander-Paavilainen 2005, 70, 171; Ylönen 2005, 17, 22–23). Paradoxically, some students have critiqued the thesis goals and criteria for being too low, and expressed the motivation to work even harder at the edge of their competence (Frilander-Paavilainen 2005, 161). Yet, simultaneously, they have listed a variety of problems caused by lack of competences and the special skills needed in the thesis process (Leinonen 2001, 158–159). Specifically, students have clearly voiced the need for special support in the first stages of the thesis process when setting the thesis objective, tasks and demarkation, which all guide the rest of the process (Frilander-Paavilainen 2005, 175; Leinonen 2001, 157-160; Pehkonen & Kauranen 2012, 23; Ylönen 2005, 14–15). Researchers warn that the difficulties experienced in the topic selection phase can result in delaying the thesis (Pehkonen & Kauranen 2012, 23), lowered motivation, perceptions of poor advising provision, and lack of depth in thesis learning (Ylönen 2005, 22–23). Unsuccessful demarkation can also result in students experiencing problems with theoretical framework design, and the synthesis of results (Leinonen 2001, 160).

The above results clearly indicate the existence of a similar “groping stage” as in the international literature (cf. Tan 2007, 207). The “groping stage” is in the Finnish context aggravated by lack of faculty commitment, support and advising in the tripartite collaboration process (Frilander-Paavilainen 2005, 138), companies’ lack of understanding of the learning objectives of the thesis, and their focus on maximizing organizational gain from the thesis starting from the topic definition (Frilander-Paavilainen 2005, 161). Students have also voiced concerns that the attainment of goals set by the educational policy (i.e. RDI to support regional development and business) has been left for them to fend for (Frilander-Paavilainen 2005, 161).

Students do not only need assistance with topic selection. Additional faculty support has been called for when writing down research questions, searching for literature, demarkating and handling the theoretical framework, finding source material, preparing the research design, learning analysis methods, planning data collection, working with data, interpreting and reporting the results, writing the discussion and conclusion chapters, producing text and evaluating own work critically (Frilander-Paavilainen 2005, 72; Leinonen 2001, 158–159, 183; Pehkonen & Kauranen 2012, 18–23; Ylönen 2005, 22). Students have also requested improvements to out-of-date, unclear and hard-to-find guidelines, orientation to the thesis process through more studies in research skills, the timing of the process, the lack of alignment of practices with written guidelines, and an earlier start for the thesis process. (Pehkonen & Kauranen 2012, 23–24.)

Socioconstructivist pedagogy and collaborative learning has been tried and found useful to complement individual thesis advising (Leinonen 2006; Leinonen 2012; Frilander-Paavilainen 2005; Vesterinen 2003). The process should encourage the students to discuss, critique and interpret each others’ work in peer groups, and with faculty and working life organizations. Together these facilitate learning both individual and communal expertise during the thesis process. (Frilander-Paavilainen 2005, 164–176; Mäenpää 2014 56–58.) Students have experienced these approaches useful as they allow learning from other students’ theses and receiving critical peer comments on one’s own thesis (Leinonen 2006, 117). Peer feedback has, however, also received critique. Leinonen (2006, 119) lists as problems heavy focus on structural and linguistic aspects rather than on substance, the lack of dialogue, and the inability to activate the audience.

In the faculty relationship, students may assign their problems to the abstractness of the tuition, and the person and knowledge of the advisor, while the root of the problems may actually lie in the students’ own lack of basic ontological understanding (Kilpiäinen 2003, 77, 127–128). Students have critiqued the advising provision for being uninformative, one-sided, rigid, and lacking in creativity or critical approach (Kilpiäinen 2003, 77, 127–128). Some students have also reported not receiving advising from the teacher or the working life representative (Frilander-

Paavilainen 2005, 106). This may be partly due to the varying conceptions teachers have of self-guidedness, some of which may result in leaving the student to fend for himself during the thesis (Frilander-Paavilainen 2005, 162). Yet, individual thesis advising has been considered very useful by majority of students alongside with shared seminars (Leinonen 2001, 147, 154). Students' key criteria for choosing an advisor have been expertise, shared interests, earlier collaboration and advisor's personal characteristics (Leinonen 2001, 174–175). They expect to receive guidance for both themselves as learners and for the thesis as a work in progress (Leinonen 2001, 176–177). Students hold in high esteem advisor's encouragement, matter of factness, empathy, enthusiasm and comradery, criticality, demandingness, sense of humor, warmth and impulsivity (Leinonen 2001, 185–186) in line with much prior international research. Flexibility and accessibility of the individual provision are much appreciated by students (Leinonen 2006, 121).

As stated in the beginning, there are some additional research foci in the Finnish literature, partly due to the contextual differences arising from the UAS legislation and national research strategies. These focus areas include integration of the thesis and the work placement, and the tripartite collaborative relationship between the thesis student, the commissioning organization and the educational institution. All parties agree that tripartite dialogue is necessary to facilitate shared understandings and a smoother thesis process. (Frilander-Paavilainen 2005, 72, 137–138, 141,161–170). At its best, the collaboration facilitates for the student an extended work experience in the multivoiced dialogue of an authentic working environment and within its community of practice, which, in turn, generates learning and increases innovation opportunities for all parties (Frilander-Paavilainen 2005, 142; Hyrkkänen 2011, 12–16; Leinonen 2006, 109, 121; Rissanen 2003 18–19; Vanhanen-Nuutinen *et al.* 2006, 243–244). The collaborative process also helps students develop and improve upon a multitude of competences from self-management to cognitive, emotional and social skills, and to crucial working life skills (Frilander-Paavilainen 2005, 164; Leinonen 2012, 482, 485, 524; Mäenpää 2014; Toljamo & Ihohanni 2007, 298; Ylönen 2005, 19). Managing the relationship has proven challenging in practice, however. Faculty should facilitate the tripartite collaboration process and inform working life organizations. Yet, faculty often fails to meet this brief, while also providing insufficient advising (Frilander-Paavilainen 2005, 164–176; Leinonen 2006, 121) with the result that student unnecessarily experience avoidable difficulties. Since students also consider it important that their thesis results be usable, and that the company actually utilize them (Ylönen 2005, 22–23), the role of faculty facilitation is clearly crucial.

This review of Finnish literature shows that the same research gap exists in both the Finnish and the international UG dissertation/thesis research. Both highlight the difficulties students face throughout the thesis process, and, specifically, in the first stages. Yet, there are no studies

focusing specifically on this challenging stage. The methodologial situation is also the same: there are no GT studies focusing on the thesis experiences of UAS thesis students or faculty in the Finnish context. There is a clear gap to fill with a study focusing on the experiences of UAS bachelor's students in the first stages of the thesis process in the context of the Finnish UAS system utilizing GT as the research approach.

1.5 Research objectives in GT

> *Remember and trust that the research problem is as much discovered as the process that continues to resolve it, and indeed the resolving process usually indicates the problem. They are integrated.* (Glaser 1992, 21.)

Appreciating the role and the process of discovering a research problem in a GT study is central to the method. In the original GT methodology books, the research problem must emerge from the data inductively during the continuous data collection and coding process for it to be an authentic and relevant one (Glaser & Strauss 1967; Glaser 1978). Glaser (1992, 21) stresses that a predefined research problem has the effect of forcing the data with the result of producing no or only small yields, since the problem chosen may not be relevant for the substantive area in the first place. The researcher is exhorted to start with "an area of a life cycle interest", which can arise, for example, from personal or professional experience (Glaser 1992, 22–23). Thereafter, the researcher is advised to "keep an open mind to the emergence of the subjects' problem" (Glaser 1992, 23). Glaser (2001, 99) calls this "the main concern of the participants whose behavior continually resolves their concern". This concern will be "the core variable" of the investigation, " the overriding pattern", "the prime mover of most of the behavior seen and talked about in a substantive area (Glaser 2001, 99).

Charmaz (2006, 15–17), a more recent GT theorist, uses the terms "research interests" and "points of departure" to describe the starting points of her own research projects. Dey (1999, 4), in turn, instructs the researcher to choose "an area of inquiry and a suitable site to study". Birks and Mills (2011, 20–21) also highlight that it is the research that generates the question; therefore it should be phrased broadly in a manner that reflects the problem-centered perspective of the subjects. They echo the viewpoint of Corbin and Strauss (2008, 25–27), who stress the importance of formulating broad, flexible questions indicating the topics of interest, while serving to delimit and simultaneously allow freedom with the scope of the research. Their argument is that such a focus in qualitative research helps the researcher to avoid straying into areas that are unproductive and unrelated to the research at hand; while, simultaneously, they facilitate exploring several

perspectives into the topic, and allow more detailed questions to arise and direct the research as data collection and analysis progress. From such formulation the reader should be able to identify the topic area and the particulars about the topic that are of interest to the researcher.

These guidelines were followed in the setting of the research objective, which is the topic of the next subchapter.

1.6 Research objective

Examining the legislated tasks of UASs – teaching, RDI and the development regional economies and working life – one can fairly state that the UAS bachelor thesis stands in the intersection of these three tasks. This study examines this "intersection" from the viewpoint of the UAS bachelor thesis students.

The thesis process consists of several phases. These are selecting the topic, planning the thesis project, developing the knowledge base, gathering and analysing data, working on development ideas, evaluation and reporting (Jolkkonen 2005, 13). In this study, the focus is on the planning stage of the thesis. This focus of interest has emerged slowly over fifteen years of professional practice as a degree program thesis coordinator, thesis planning and presentation workshop lecturer, thesis supervisor, senior lecturer in human resource management, and academic advisor. During those years, I have had the privilege to work with highly motivated, intelligent and competent thesis candidates, average ones, and ones without the necessary motivation or competences to complete a quality bachelor thesis. There has been much stress, elation, frustration and hope; thousands of questions and wonderings; and exquisitely skilled peer support shared between student colleagues. My professional interest lies in developing UAS RDI pedagogy in order to facilitate UAS thesis candidates conduct successful thesis projects, and experience personally and professionally meaningful RDI processes. The topic therefore arises from professional and personal experience in the truest sense of the word (cf. Birks & Mills 2011; Glaser & Strauss 1967; Glaser 1978).

The research problem can be formulated broadly as: What kind of a substantive grounded theory emerges from a study of the experiences of UAS bachelor thesis students in the planning stages of the thesis project?

The outcome of the research is a substantive grounded theory that describes "the main concern" of the subject (i.e. UAS bachelor thesis student) and the "social process", "the action in a substantive area" or "resolving process" through which they attempt to address their concern (utizing Glaser's terminology 1992; 2001).

The practical and theoretical relevance and significance of the study is twofold. Firstly, the substantive theory presented provides practitioners, such as, UAS faculty and management, food for thought regarding what to consider pedagogically and didactically when undertaking curricular reform, designing and conducting thesis workshops and supervision for UAS bachelor-level – often novice – researchers and developers. The theory provides information on what students experience as easy and as challenging when getting started with their unique thesis projects. Secondly, thousands of students start and complete UAS thesis projects annually; yet there is a gap in the scientific knowledge base explicating their experiences of the first stage of the thesis process and the pedagogic support structures available. This study aims, modestly, to start filling the gap in the UAS literature. It also offers a point of reference for other researchers interested in the topic.

1.7 Delimitations

The field of research pedagogy or, more widely speaking, RDI pedagogy is large. Careful demarcation is therefore crucial to ensure that the current research project stays within the scope of a master's thesis, and focuses on a manageable substantive area within the confines of the phenomenon.

Firstly, regarding the type of grounded theory, a middle-range or formal theory based on widening the scope of one or more substantive theories (for definitions, see Corbin & Strauss 2008, 56) is outside the scope of a master's thesis. Glaser and Strauss stress the importance of making a clear selection between substantive and formal theories when commencing a research project.

> *Substantive and formal theories exist on distinguishable levels of generality, which differ on in terms of degree. Therefore, in any one study, each type can shade at points into the other. The analyst, however, should focus clearly on one level or other, or on a specific combination, because the strategies vary for arriving at each one.* (Glaser & Strauss 1967, 33.)

Secondly, the field of RDI pedagogy in the context academic studies is a wide area of study. Finnish HE follows the three cycle (bachelor, master, doctorate) structure of degrees agreed for the European Higher Education Area (EHEA). Additionally, the accord allows national intermediate qualifications, which in the Finnish context is a licenciate degree below the doctoral degree. The structure was set up as a result of the Bologna Accord process, which aimed to ensure the comparability of HE qualifications across member countries (Conference of European Ministers Resonsible for Higher Education 2005, 2). Examined from the perspective of the HE structure, this

study was delimited using the inclusionary and exclusionary criteria shown in figure 1 (areas highlighted green).The focus was on the final academic project, the bachelor thesis, required in many first-cycle bachelor degree curricula. Within the bachelor thesis, the focus was on the planning stages of the thesis project, specifically.

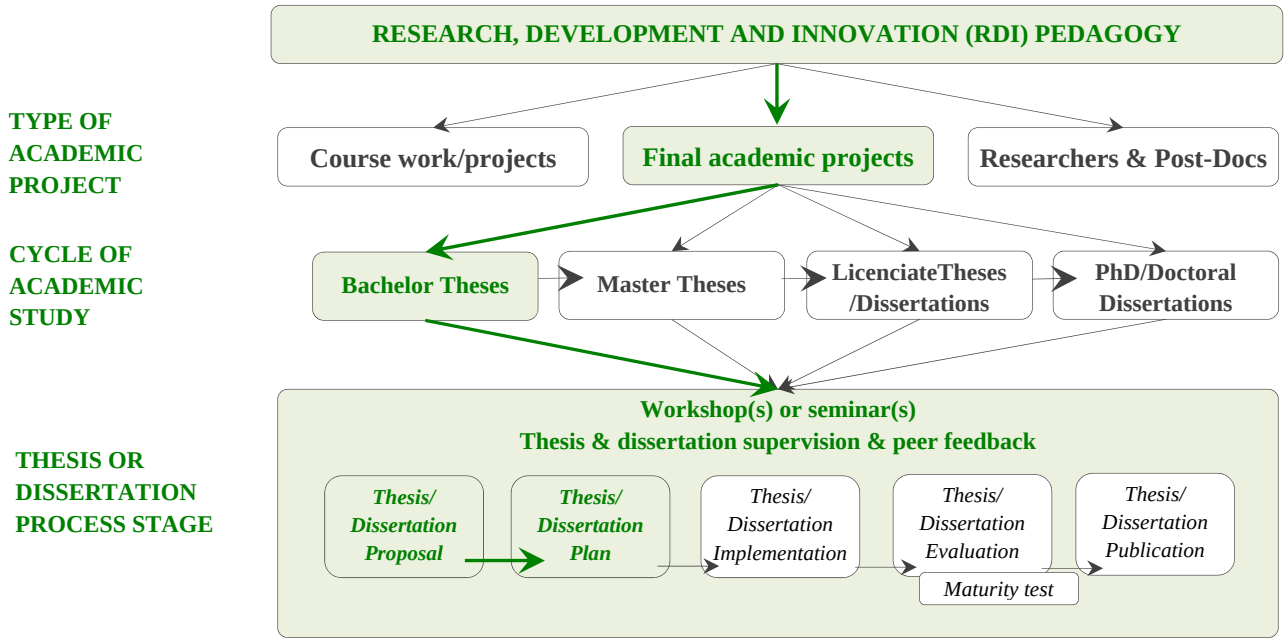

FIGURE 2. A conceptualization of RDI pedagogy by the type of project, level of academic study, and the stage of thesis or dissertation process. The areas shaded green indicate the demarkation of the study.

Thesis projects are mostly done individually, although small group (2–3 persons) theses are allowed. In the metropolitan region UAS business degree program studied, two-person theses are a rarity and three-person theses are not done. RDI projects completed in courses were not considered. The main difference between thesis and course projects is that course projects typically utilize team-based social learning pedagogies and collaborative writing. Thus, the amount of peer assistance in course projects is much higher than in thesis projects. The outcome of the thesis planning stage is a research proposal or plan with information on the title, the background to the study, the research question, research objectives, method, literature review, timescale and references (Saunders, Lewis & Thornhill 2009, 41–45). It should be noted that the type of proposal produced by the business students investigated here did not require a thorough literature review, but rather indication of key concepts, theories and models suited for the specific needs of the project. Additionally, the methods chapter indicated only key methods to be used without much methodological argumentation. Also the references list was typically a very tentative one.

Both research and project or product oriented theses were covered. Part of the Finnish UAS theses are traditional research oriented theses following some version of the IMRD reporting structure. Increasingly, however, students are completing project or product oriented theses, where, instead of a research question divided into investigative questions, they formulate a project objective divided into project tasks. The outcome of a project oriented thesis can be, for example, an event in a trade fair or a social media advertising campaign. The product oriented theses are more focused on producing physical 'products', such as, sales manuals tailored to commissioning company needs, packaging designs or warehouse plans. Many institutions do not differentiate between project and product oriented theses, but use the terms interchangeably, because the line between a project and a product can be hard to draw.

Lastly, the conditional/consequential matrix was utilized to locate and focus on the most relevant levels of analysis for purposes of data collection, analysis and theorizing. Corbin and Strauss (2008, 90) developed the matrix to help analysts "relate structure to process", that is, contextual conditions and consequences to human action, interaction and emotion (FIGURE 3). The outermost rings represent macro context (structure). The level of analysis focuses on a smaller and smaller context until, in the center, lies the individual person's micro context (structure). Since it is possible to "study any substantive topic within any area of the matrix" (Corbin & Strauss 2008, 95), it is important to make a conscious delimitation to ensure that the data collection remains focused at all times, and, consequently, the scope of the thesis remains within that of a master's thesis. The study at hand keys in on the personal experiences of UAS bachelor thesis candidates in the early stages of the thesis process. In other words, the analytical focus is on the core level of "action pertaining to a phenomenon" (yellow area in FIGURE 3). As Corbin and Strauss (2008, 93) point out, however, whatever the focus, the outer layers influence and cross over to the inner layers, and vice versa, often in unanticipated ways. Hence the analysis will also touch on other levels, such as, "interaction", collective", "sub-organizational and sub-institutional", "organizational and institutional", and "community".

In the context of this study, up to the "organizational and institutional" layers, the thesis candidate is interacting with the educational institution and its faculty (green circles in FIGURE 3). The "community" level, on the other hand, refers to organizations and businesses that students aim to complete commissioned thesis projects for (blue circle in FIGURE 3). The "national" layer has an immence influence on all the inner layers as the political and legislative *primum movens* for the bachelor thesis. As it is not the focus of the study or the data collection, but rather sets the background for the activities investigated, it was presented above in chapters 1.1 through 1.3. The "international or global" layer was not studied. But, about half of the respondents were

international students, which means that international aspects were present in the analysis to a degree.

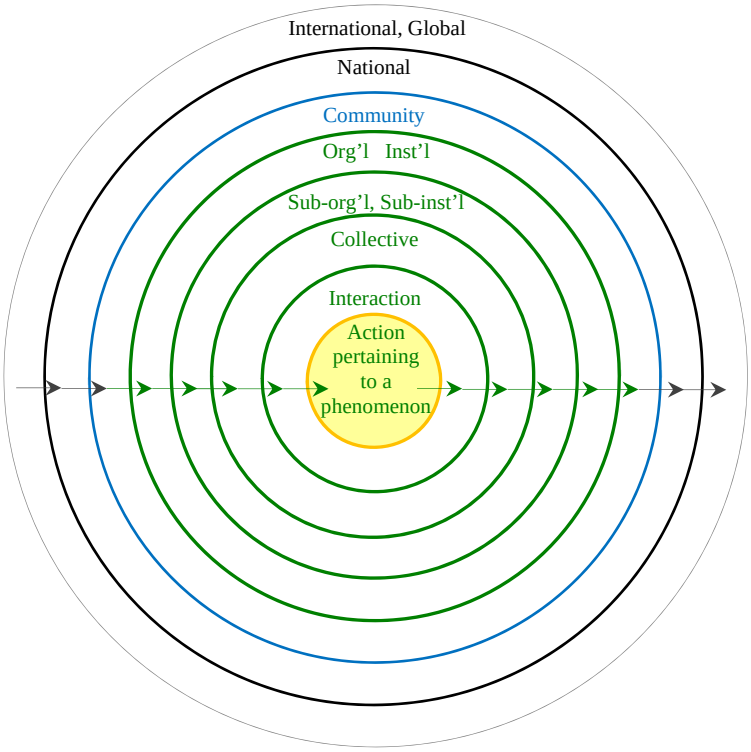

FIGURE 3. Delimitation of the study shown on the conditional/consequential matrix of Strauss and Corbin (2008, 94; image reproduced by author).

Based on the above limitations, the results apply directly only to students undertaking their bachelor thesis project in the specific UAS business degree program investigated. The results may, however, be at least partly relevant for any Finnish UAS bachelor' degree program where the institutional conditions of the thesis process are similar to the degree program studied.

1.8 The author's pre-understanding

Birks and Mills (2011, 19) stress that the researcher must acknowledge his "existing assumptions, experience and knowledge of the area" – his "thoughts, feelings and ideas" – at the outset to establish his position in relation to the study at hand. By making the pre-understanding transparent the researcher can become aware of ideas that might force the data, and at the same time they may become data (Birks & Mills 2011, 80). Corbin and Strauss (2008, 10–14) stress along the same lines that every person is a product of his culture, time in history, gender, experiences and training.

Because of this it is important for every analyst to “wave the red flag” with regard to himself and his respondents when “biases, assumptions, or beliefs” intrude on the analysis (Corbin & Strauss 2008, 80). The researcher must understand that he also is a research instrument, and therefore needs to be self-reflective to explore how he influences the research, and how the research influences him (Corbin & Strauss 2008, 11, 13).

Some of the pre-understandings I hold are evident in the research objective chapter (1.6) in the discussion about the personal and professional interests from which the topic emerges. A more in-depth reflection is, however, appropriate in a qualitative study, and, specifically, in a GT study. In the many professional roles I have taken toward and with the students, in the observation, teaching of, collaboration and colearning with students, I have come to hold several beliefs about UAS bachelor thesis candidates.

Firstly, I have had the great privilege to work with well over a thousand thesis candidates over the past fifteen years. The overwhelmining majority have chosen their thesis topics from the authentic world of work in the quest to develop their working life skills, experience something new, build their professional networks, and/or to prepare for their chosen careers and further studies. A small minority have entered and interrupted or completed the thesis process with little to no motivation, competences or personal professional goals. Unfortunately, for such students the outcomes have often matched the initial attitude of “having to do a pointless thesis”. Students have researched and developed solutions for real organizational problems, and planned and implemented projects related to our four specialization fields: Human resource management, marketing and customer relations management, accounting and finance, and supply chain management. The best of our students continue to amaze and motivate me professionally with their thesis achievements.

Secondly, regarding thesis students, their professional and RDI competences vary from individual to individual between quite deficient to excellent. Similar variation is evident in their motivation for and ability to engage in self-directed thesis work. Some find it very difficult to cope with the stress, uncertainties, challenges and surprising changes a thesis project inevitably contains. In the degree program investigated, commissioned theses are the preferred option among both faculty and students. Commissioned thesis projects require knowledge and skills above and beyond a desktop study. Students’ competences to sell their expertise, coax out a development need in an interview, consult on business problems that need solving, and negotiate the terms and conditions of a commissioning agreement show great variation. For quite a few even the first step of starting with cold calls to find a commissioning organization is a daunting task.

To sum up my preunderstanding of the thesis candidates' experience, they are required to engage in RDI project acquisition, selling, planning, implementation, assessment and publication activities that generate a myriad of cognitive, emotional, physical and social responses in them. These responses vary from fear, stress and exasperation to feelings of competence, success and joy.

Thirdly, regarding the faculty working with thesis students, their competences, motivation and attitudes appear to greatly influence students' experiences of and progress in the thesis process. UAS faculty commonly hold, at the minimum, master's degrees and are experts in a certain study field in which their teach and advise. Their pedagogic expertise and RDI competences vary, however, depending on their prior studies, further education activities and work experience. Additionally, their attitudes toward students and their motivation to advise students' undertaking thesis projects vary from poor to excellent. Due to many and varied demands on faculty time, work time can also be in such short supply that it may be challenging to schedule long thesis advising meetings with students. Thesis candidates give feedback on their experiences of faculty support in academic advising meetings and through graduation feedback surveys. Comments have varied from deep gratefulness to heartfelt complaints. Students appreciate greatly the support they receive from faculty members who show authentic interest in the student's project, and have the working life, substance, methodological and academic writing expertise to help the student negotiate hurdles they feel unable to manage alone.

Fourthly, prospective and contracted commissioning organizations are an important stakeholder in the thesis process. They can facilitate or hinder the success of thesis projects. Based on discussions with hundreds of students, the organizations appear to have remarkably varied levels of appreciation for, and motivation, commitment and compence to collaborate with UAS thesis candidates. During the years, a number of commissioning companies have taken weeks or months to decide whether they will or who has the authority to contract a student for a thesis project (even an unpaid one), gone out of business when a thesis was almost ready, and undergone staff changes that resulted in the disappearance of an agreed thesis project. Some companies agree on a project, but when it is time to distribute surveys they either put limitations to the contents of the survey or set rigorous conditions on whom the survey can be sent to, in the process crippling the student and his thesis project. Fortunately, there have been hundreds of commissioning companies who have appreciated the student's work, been actively engaged in the planning and implementation of the project, and facilitated its success in all ways possible. Students are invariably thankful for such great learning experiences.

Lastly, situations arise in students' personal lives that can slow down or stop progress in the thesis project – or – facilitate and hasten it. Over the years, there have been illnesses, pregnancies divorces, losses of work places and bankcruptsies as well as excellent unexpected job opportunities, high-quality professional networks and foreign assignments. These factors are outside the remit of instruction, and academic and thesis advising, but nevertheless carry undeniable consequences to academic progress.

It is these preunderstandings that generated my interest in the topic at hand. This study aims look deeper into the matter in order to capture student experience in their own words and theorize on it. The study's delimitations arise from the fact that getting started with the thesis project has, in my observation, proven to be one of the biggest hurdles for students. As this is the first GT study in the area, it also makes sense to start with students' experiences at the beginning of the thesis project.

2 METHODS

This chapter describes the research design, the institutional context, ethical concerns, and data collection and coding activities as well as theoretical saturation issues.

2.1 Research design

> *Within these relations existing among social research, substantive theory and formal theory is a design for the cumulative nature of knowledge and theory. The design involves a progressive building up to facts, through substantive to to grounded formal theory. To generate substantive theory we need many facts for the necessary comparative analysis; ethnographic studies, as well as direct gathering of data, are immensely useful for this purpose. Ethnographic studies, substantive theories and direct data collection are all, in turn, necessary for building up by comparative analysis to formal theory. This design, then locates the place of each level of work within the cumulation of knowledge and theory, and therefore suggests a division of labor in sociological work.*
> (Glaser & Strauss 1967, 35.)

The objective of this research is to present a substantive grounded theory that describes and explains how UAS bachelor degree students experience the planning stage of their thesis in the specific context of a mandatory thesis planning course in an international bachelor of business program in the metropolitan region in Finland. The focus is on studying data that shows the ways students verbalize their experience. The philosophical position taken is akin to the focus on the research subject's lived experience as highlighted in phenomenological research (Smith, Flower & Larkin 2009) and heuristic research (Moustakas 1990). As a consequence, epistemologically the "truth" is a highy subjective concept. Truth is what the respondents perceive, feel, think, say and what their behavior implies. The methodological approach follows the qualitative interpretive paradigm, which aims to "understand the subjective world of human experience" (Cohen, Manion & Morrison 2011, 17). Interactionism and pragmatism form an important foundation for the GT methodology. Interactionism stresses that individuals interpret and give meanings to each other's actions before reacting to them – thus, an individual never responds to the other person's act *per se*. (Corbin & Strauss 2008, 2.) Pragmatism highlights that knowledge is created through the action and interaction of self-reflective beings, typically, in a problematic situation demanding a new kind

of solution. Knowledge and truth are temporal and contingent in nature as they always depend on the process experienced, the operative perspectives of the knower, and the cultural context and collective the knower knows in. (Corbin & Strauss 2008, 2–5.) The interactionistic and pragmatist nature of the reactions and the knowledge of the stakeholders to the thesis planning process studied here become clearly visible in the substantive grounded theory presented in chapter 3.

Typical levels of analysis in sociological research are the individual level, the interactive level of groups, and the collective level of organizations, societies or cultures (Cohen, Mannion & Morrison 2011, 196). This piece of educational research focuses on the experiences of an individual within the varied processes of bachelor thesis planning.

Qualitative methods are well suited to studying individual and social human experiences in the field of educational research. This fit arises from the characteristics of qualitative research: it is naturalistic, context-oriented, inductive, descriptive, and concerned with processes and meanings (Bogdan & Knopp Biklen 1998, 4–7, 39.) Glaser (1992, 12) recommends the use of qualitative methods "to uncover the nature of people's actions and experiences and perspectives which are as yet little known in the world of research products". GT, specifically, is suited to study phenomena deficient in prior study and theoretical knowledge, especially, when such knowledge is needed to facilitate professional decision-making (Koskennurmi-Sivonen 2007). This study aims to describe and explain the variety of experiences students have while writing their thesis plans. This information can help professional decision making in educational design. Understanding students' successes and difficulties can lead to improved pedagogic interventions to support and scaffold the student's process before, during and after the thesis planning stage.

In their seminar work, "The discovery of grounded theory: strategies for qualitative research" (Glaser & Strauss 1967, 1–6), the creators of the GT method suggest that the usefulness of a theory is dependent on how it was generated, and that, specifically, inductively developed theories from social research are likely to be better in terms of how they fit with and work (explain and predict) the phenomenon studied. Similarly the adequacy, usefulness, logical consistency, clarity, parsimony, density, scope and integration of a grounded theory are likely better. The emergence of GT was premised on two opposites. The first was contrast between traditional logico-deductive theories based on a priori assumptions as opposed to inductive GT method based on the emergence of a theory and its components from data. The second opposition dealt with the objectives of research, on whether the focus is on the traditional verification of theories as "the chief mandate for excellent research" as opposed to the the generation of theories without the traditional testing and verification processes. GT relies on inductive and abductive processes to

generate theory, and establishes reliability through criteria, such as, fit and working rather than testing and validation.

The study was conducted, as much as possible, in the spirit of original GT as presented by Glaser and Strauss (1967), and later on refined by Glaser (1978, 1992) in order to ensure that the substantive theory truly "emerged from the data" in Glaser's meaning of the term. Firstly, an essential requirement for GT as a qualitative approach is that the emerging theory goes beyond description to "explain, account for and interpret the variation in behavior in substantive area under study" (Glaser 1992, 19). This is a key difference between GT and other qualitative data analysis (QDA) techniques: GT aims at constructing theories at the conceptual level and integrates hypotheses about the relationships between the concepts, where as QDA produces a description which may also contain a conceptual description (Glaser 2001, 1–2). Even though description is not the sole goal in GT, it should be noted that thick description (Geertz 1973, 312 referencing concept by Ryle 1971) is a typical goal in qualitative research and also GT as a qualitative research method. A thick description achieves richness of detail combined with parsimony (Geertz 1973, 312 referencing concept by Ryle 1971). Another related term is rich data, which "get beneath the surface of social and subjective life" (Charmaz 2006, 13). Thick and rich data facilitate the emergence of a grounded theory that fits and works.

Secondly, Glaser (1992) vehemently opposes to forcing data by utilizing existing concepts, models or theories before or during the data analysis process to guide the data collection or the coding of data. Ideally – and impossibly – the researcher should be a kind of *tabula rasa* on the topic researched or have read only "a modicum of literature" in the same field. The substantive area of study should not be reviewed before the study, because this may contaminate, constrain, inhibit, stifle or otherwise impede the researcher's effort to create categories, their properties and theoretical codes that fit, work and are relevant (paraphrasing Glaser 1992, 31). However, when the grounded theory is emerging in the saturation, densifying and sorting process, existing, clearly relevant, theory can be integrated into the process (Glaser 1992, 33) – but without any intention of verification as GT never aims to verify (Glaser & Strauss 1967, 2). While Glaser's (e.g. 1992) rancorous critique against Strauss and Corbin's (e.g. 1990) elaboration of the GT method may be ungentlemanly, his crucial point about the analytical processes of emergence versus forcing of data is a worthwhile one in research that truly aims to establish something about the lived experience of those studied. Birks and Mills (2011, 3) agree that GT as a highly interpretive research approach attains best results by interpreting the data initially without preconceived conceptual frameworks such as Strauss and Corbin (1990; 2008) present. Birks and Mills (2011, 3) also suggest that later on in the theory integration stage preconceived conceptual frameworks may prove quite useful.

Thus, while the research design relies on Glaserian thinking, the ideas of later GT theorists (Birks & Mills 2011; Charmaz 2006; Urquhart 2007) have also been incorporated. Useful concepts from Corbin and Strauss (2008, 151) are integrated into the design, such as, the conditional/consequential matrix used above, which, in my opinion, can be used advisedly without forcing the data to build awareness of one important starting point in the research design. The literature review focusing on prior studies on student experiences of research education and dissertations was written after the substantive theory had emerged at an advanced level of integration. Preconceived frameworks were brought to bear only in the later stages, when integrating and scaling up the substantive theory, at which point certain concepts, theories and models from education and psychology emerged as relevant.

The objective of GT is to use the flexible general principles and heuristic devices of GT to present an original conceptual analysis of the data (Charmaz 2006, 2). As the study at hand is one of the few GT studies into this specific phenomenon, and the first one in the context of Finnish UAS bachelor theses, the objective is to construct a substantive theory "grounded in research on one particular substantive area" (Glazer & Strauss 1967, 79) rather than a formal theory "developed for a formal or conceptual area of sociological theory" (Glazer 1978, 144). Later studies can build on this initial substantive theory, and eventually accumulate enough knowledge to formulate a formal theory that applies to a more general set of contexts and situations (Glaser & Strauss 1967, 35).

Figure 4 below illustrates the overall research design with the data collection, memoing, analysis and integration processes. The design is expounded upon in the following subchapters.

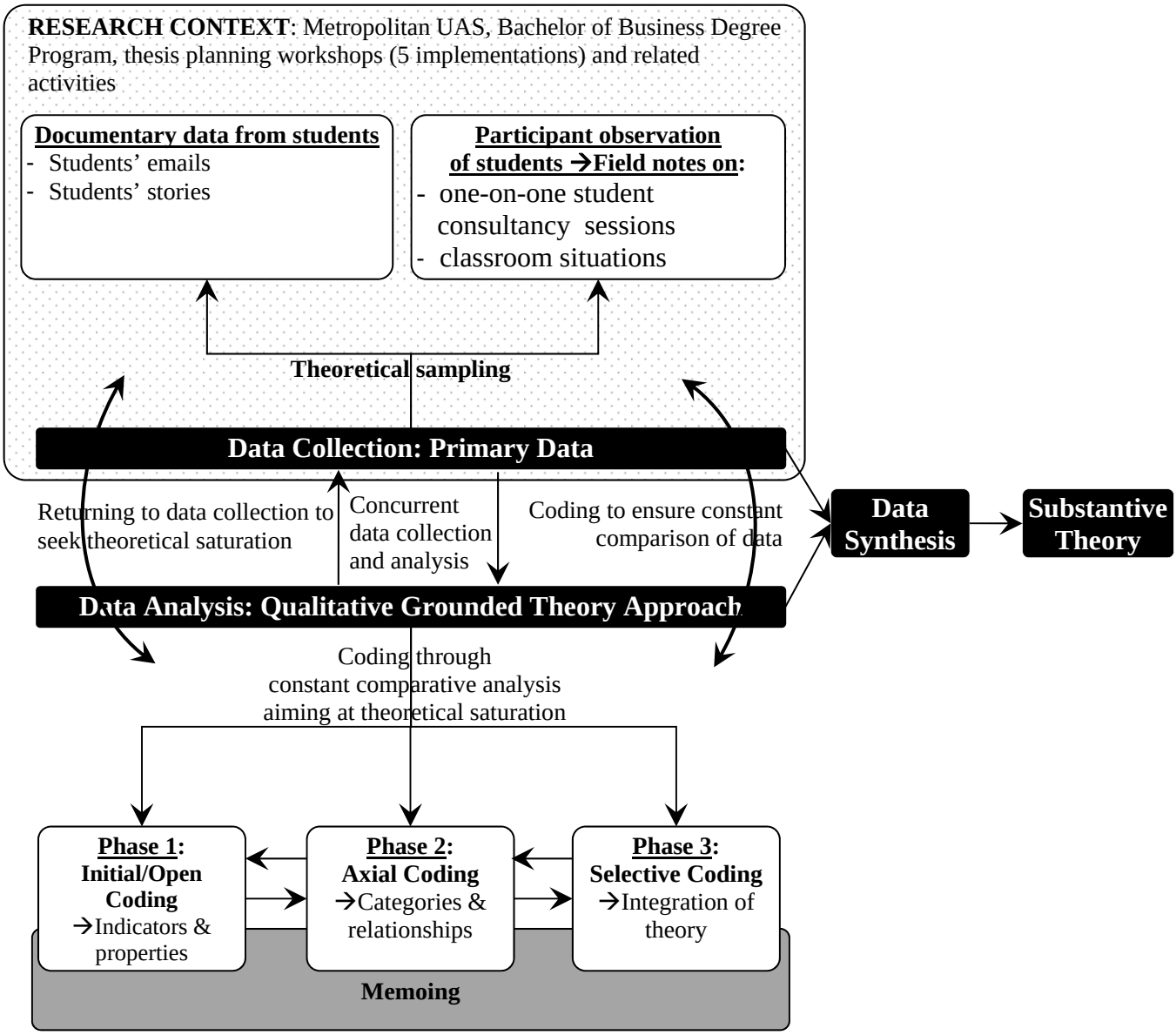

FIGURE 4. The research design following the precepts of GT.

2.2 Institutional context

The study was implemented:in a bachelor of business degree program offered in a major Finnish metropolitan UAS. The norm duration of the degree program is 3½ years divided into 7 semesters. Students complete an average of 30 ECTS per semester[21]. Some students complete the program in a shorter time, while others apply for an extension to complete it in 8 to 10 semesters. Students in the program come from all around the world. A typical ratio of Finnish degree students to international degree students is half and half with a slight variance between entry groups.

[21] European credit transfer system study credits: 1 ECTS equals 27 hours of student work in and out of contact classes.

The degree program curriculum complies fully with the EQF both at the European level and Finnish level as expounded on in chapter 1.4.3. No separate set of RDI competences could be found in the degree program documentation. RDI competences are mentioned only indirectly in the curricular competence framework (e.g. “analytical skills”, “skills to plan and effectively implement activities in the area of specialisation in global markets” and “ability to plan, organize and carry out multicultural projects”). Direct references to RDI competences appeared at course level only and in very few cases (e.g. “ability to plan and conduct market research).

The majority of the respondents were fifth semester students participating in a mandatory 8-week thesis planning workshop. Students behind in their studies (semesters 6–8) and students ahead of the schedule (semester 3–4) were also included among the respondents. The workshop has been implemented in its current from since October 2011 with only minor alterations between implementations made based on student feedback and faculty observations. Before the workshop in the fourth semester, students attend a thesis info session apprising them of the thesis process and its goals, and advising them on how to search for and approach negotiations with prospective commissiong organizations. After the planning workshop in the sixth and seventh semesters, students work on implementing and finalizing the thesis with their substance advisor and methods workshop advisor. When the thesis is (almost) ready, the students present it to peers in the thesis presentation workshop in the sixth or seventh semester to receive final peer and faculty feedback. Many commissioning organizations also wish to have presentations on their premises. When the student judges his thesis ready, he sends it to an English language check and to a plagiarism detection program, which both must receive a passing grade to continue to publication. The student publishes the thesis on-line in the national thesis database or the internal UAS database, and sends the publication link to the thesis advisor for final assessment. All theses in the UAS are assessed on a standardized scale from 1 (satisfactory, lowest passing grade) to 5 (excellent). Lastly, the student completes his statutory maturity test, which covers the contents and/or process of his thesis.

The thesis planning workshop, which forms the context of this study, guides the students in the first stages of the thesis process and requires them to write and present an acceptable thesis plan as a prerequisite to moving on to individual thesis advising. The objectives of the thesis planning workshop are (1) to provide a structured thesis planning process with faculty support for business substance, RDI methods and academic writing; (2) to assist the students in their search for and negotiations with a commissioning company from the private sector, government or non-governmental organizations (NGOs); (3) to introduce students to the requisite RDI terminology so that they can discuss using a single shared set of terms, and relate the shared set of terms to the

variety terms used in research literature; (4) to process write the thesis plan part by part through a set of seven assignments debriefed in class with faculty and small peer groups set by students themselves[22]; and (5) to provide the students an RDI community consisting of faculty and students for brainstorming, discussion and feedbacking of drafts. These five objectives aim at objective 6, which is to at alleviate research anxiety and the ABR (anything but research syndrome) during the course. From competency viewpoint the mandatory course develops students' information literacy (e.g. ALA 2000, 1–3; NGSS Lead States 2013, xx & appendix F), research competence/ability (e.g.; Badke 2012) social relations competence (Garner & Seacombe 2009, 81–82), research ethics competence (McAucliffe 2009) and reflectiveness in research (Earley 2009) in line with the literature discussion in chapter 1.4.2.

The pedagogical approach of the planning workshop is in line with many of the recommendations given in the research pedagogical literature (chapters 1.4.5 and 1.4.11). The course utilizes a combination of positive and encouraging instructor behavior (Onwuegbuzie & Wilson 2003, 18), demonstration of the relevance of applied research to careers and working life (Bolin, GlenMaye, Lee & Yoon 2012; Halcomb & Peters 2009), purposive human-mediated activities (Head 2008), small groups (Duze 2010; Garrett 1998; Halcomb & Peters 2009), peer support, discussions and critique in respectful collaboration (Frilander-Paavilainen 2005, 164–176; Leinonen 2006; Leinonen 2012; Mäenpää 2014, 56–58), and one-on-one coaching (Head 2008, 343, 437) in and out of class. In general, advising from several actors has a great impact on a student's thesis work (Leinonen 2001, 153). The course combines a well structured student-centred tutor-led (Edwards & Thatcher 2004) and clearly stratified approach (Leckie 1996) in class with each student preferrably working on his own plan at the same stage as others (Leckie 1996), while also facilitating individualized pace of advancing as needed (Bolin, GlenMaye, Lee & Yoon 2012; Head 2008, 343, 437) through one-on-one coaching. Since the thesis is ideally – and, in the majority of cases, in fact – a commissioned project for business, government or NGOs, the approach also makes use of project-based learning (Winn 1995) and agency-based projects aimed at servicing commissioning organization's needs (Kapp 2006). Due to the continuous negotiations undertaken by the student with one or more prospective commissioning organizations, students also get to benefit from the combination of knowledge (conceptual competence) and ability (doing, procedural competence) as they learn to apply concepts on real life problems (Strayhorn 2009).

[22] Task 1 Mapping thesis topics; Task 2 Defining your thesis topic in detail (incl. research question, investigative questions and demarcation; or project objective, project tasks and project scope); Task 3 Defining the theoretical frame of reference; Task 4 Academic writing for theses; Task 5 Mapping methods for your thesis; Task 6 Learning from observation in a thesis presentation workshop; Task 7.1 Opponing other students' thesis plans drafts and getting feedback on your own draft; and task 7.2 Producing the evaluation version of the thesis plan.

Finally, the instructor aims to continually be sensitive to instances of student anxiety, and manage the cases (Papanastasiou & Zembylas 2008, 165) by recognizing, allowing and discussing the emotions as a legitimate part of the process, and by helping and scaffolding when the student is too far from his zone of proximal development (ZPD).

2.3 Research ethics

The degree program director reviewed the research plan, and issued a written research permit. Thesis planning workshop students were informed of the author's research objective and data collection activities in the first session of each thesis planning workshop, and in writing via email after the first session. Students were offered the opportunity to opt out from the study without any repercussions for their course and study activities. None opted out.

Anonymity of the informants was carefully protected throughout the process. Information that might identify the student, his gender or nationality, or the commissioning organization was removed from the data prior to coding. Quotations included in this report were edited so that individual student cases cannot be recognized based on the student's topic. The coded data sheet is preserved on a secure separate memory device with password protection.

2.4 Data collection, data analysis and theoretical sampling

In GT, sampling, data collection and data analysis cannot be divorced from each other. These three are tightly intertwined and depend from and guide each other throughout the joint data collection, comparative data analysis, and theoretical sampling process. The grounded theory emerges from this process through the theoretical sensitivity of the researcher. GT research is therefore a process of concurrent (simultanously ongoing) and iterative (repeating) data collection, constant comparison of data, and theoretical sampling based on already analysed data. (Glaser & Strauss 1997, 43, 46, 102–105.) Birks and Mills (2011, 9–14) present the following as "the essential grounded theory methods": 1) initial coding and categorization of data, 2) concurrent data generation or collection and analysis, 3) writing memos, 4) theoretical sampling, 5) constant comparative analysis using inductive and abductive logic, 6) theoretical sensitivity of the researcher, 7) intermediate coding, 8) selecting a core category, 9) theoretical saturation and 10) theoretical integration. These characteristics have been present from the first seminar work on GT by Glaser and Strauss (1967) and are the hallmarks of all GT literature. Theoretical sampling is a process by which the continuous data collection and coding lead to a slowly emerging theory,

which, in turn, guides further theoretical sampling sampling decisions on what groups or subgroups need attention next, and for what theoretical purpose (Glaser & Strauss 1967, 45, 47) Below a more detailed description of how these processes were conducted in the current study.

The data was collected from full-time degree students pursuing an English-taught bachelor of business degree in a metropolitan UAS in Finland. GT can be used to investigate any type of social unit (Glaser & Strauss, 1967, 21). The social unit of analysis here was the individual's experience. As already explained in chapter 2.2, there was some variance among the students, but the typical respondent

- was studying toward his first higher education degree.
- had advanced to the third year of the bachelor degree curriculum.
- did not have prior experience in the planning, implementation and reporting of a large individual RDI project.
- was preparing to enroll or already enrolled on the compulsory thesis planning workshop course.

The data was collected over a period of 14 months or three semesters during September 2011–January 2013[23]. Five implementations of the thesis planning workshop were implemented during this period with a total of 138 participants. The number of participants per workshop varied from 12–40. Thus, data was collected from smaller groups of 12 and 19 students, and larger groups of 32, 35 and 40 students. This offered the opportunity to observe that student experiences did not vary depending on group size. A special characteristic of the groups was their multicultural nature with students from many European, African and Asian countries. South and North-American students were in a small minority

GT allows a rich variety of data types and data collection methods. Primary data can be generated through, for example, interviews, focus groups, surveys, various narrative methods and ethnographic methods. Secondary data can be sourced from, to mention just a few, prior research, archives, national statistics, research literature, theory and fiction. (Glaser & Strauss 1967, chapter IV.) Also combinations of various data types are useful. The decision regarding the kinds of data to be used is made based on which data has "the greatest potential to capture the kind(s) of information desired". (Corbin & Strauss 2008, 151.) In the current study, data collection sites and events, and respondents were purposefully chosen for their potential to capture the information desired (Corbin & Strauss 2008, 151), and to fulfill the GT criteria for theoretical sampling, that is,

[23] The Finnish academic year consists of autumn and spring semesters. The summer semester exists in name, but rarely offers a full range of courses.

theoretical purpose and relevance (Glaser & Strauss 1997, 44–48). The data was collected in authentic teaching and advising situations, where students naturally dealt with thesis related issues and decisions. From the viewpoint of theoretical sampling, these situations allowed "maximizing opportunities to develop concepts in terms of their properties and dimensions, uncover variations, and identify relationships between concepts" (Corbin & Strauss 2008, 143).

GT aims at multi-faceted investigation of the phenomenon through the utilization of different slices of data. Slices of data are "different views or vantage points from which to understand a category and to develop its properties". (Glaser & Strauss 1997, 65.) To obtain systematic, multifaceted and, therefore, more reliable and varying information on the students' verbalizations about their experience, a combination of four data collection methods were triangulated to support each other. Triangulation is a multimethod approach using "two or more methods of data collection in the study of some aspect of human behavior" in order to "explain more fully the richness and complexity of human behavior", and to increase confidence in the validity of the results (Cohen, Mannion & Morrison 2011, 195). Out of the several forms of triangulation available, methodological and time triangulation were found to be most applicable. Methodological triangulation was used in two ways. Firstly, the same methods were used on different occasions (Cohen, Mannion & Morrison 2011, 196) as five implementations of the thesis planning course were studied using the same set of data collection techniques. Secondly, different methods were used on the same object of study (Cohen, Mannion & Morrison 2011, 196) as the same student could be the observed, the advisee, the writer of an email and the writer of a story. Time triangulation takes into consideration change and process over time (Cohen, Mannion & Morrison 2011, 196). This is achieved both by aiming at diachronic reliability (stability of observations over time) and synchronic reliability ("similarity of data gathered in the same time") (Cohen, Mannion & Morrison 2011, 196 referring to Kirk &Miller 1986). Time triangulation of both types can be said to be at the heart of the GT process where the objective is to first develop a theory on a specific substantive situation. Thereafter, new substantive situations with similar societal structures and purposes can be studied. And, finally, the substantive theories can be compared to generate a formal theory with wider conceptual scope than any of the individual substantive theories. In this study, diacronic reliability was achieved through an extended period of data collection, that is, 14 months with five implementations of the same course. Synchronic reliability was achieved by studing the 12–40 students enrolled on a single course implementation simultaneously.

Data collection was implemented by gathering written data from course students (points 1 and 2 in table 1), and data from oral communication situations in the form of participant observer

notes (points 3 and 4 in table 1). These data types facilitate the study of students' own verbalizations of their experience. Three of them allow the study of verbalizations emerging as part of normal study processes, and one – written stories – allow the study of after-the-fact reflections by students. Written data was collected from students' emails and stories as follows.

(1) *Students' emails*. Many students sent thesis related questions, both general and more individual and specific, via email to the degree program thesis coordinator (the researcher) when they were getting ready to enrol on the thesis planning course, or after they had started it. Student emails were a good source to establish what types of questions students considered challenging and important enough to consult a faculty member on in writing. The emails were handled by, first, removing all identifying information, such as, student's name, student number, commissioning organization's name, or a thesis topic that would make identifying the respondet possible; thereafter, saved and put through the GT analysis process. A total of 208 emails were analysed, resulting in 507 coded items.

(2) *Students' stories*. At the end of the thesis planning course, students who had been absent from one or more task debriefing sessions, were given the option to compensate for these omissions by completing a writing task for the research project instead of the normal absence compensation task. The story format was chosen to facilitate access to the lived experience of the student as expressed in his own words at the end of the thesis planning process. The objective of the task was educative in that it invited the student to identify and reflect on what he was skilled at, and what he had trouble with during thesis planning. Interested students were instructed to write a story on these two topics. Any identifying information was removed from the stories before putting them through the analysis process. A total of 33 stories were received, out of which two were not on the subject given. 31 stories were analyzed, resulting of 183 coded items.

Oral data from authentic communication situations was gathered by the thesis planning workshop teacher (the researcher), in the form of participant observer notes on (3) *one-on-one consultancy situations* and (4) *classroom situations* initiated by students' requests for advise. The notes made it possible to document oral data from the day-to-day reality of thesis planning situations between faculty and students, and students and their peers. The notes were typed and saved in to the data analysis table, and put through data analysis. A total of 64 one-on-one consultancy notes were made resulting in 64 coded items. The number of class notes was 145 and resulted in 145 coded items. Table 1 below shows the evidence type (written or oral), the data type, time of data collection and items collected and analysed.

TABLE 1. The evidence type, types of data collected, period of data collection, number of collected items per type, and number of coded items in data analysis.

EVIDENCE TYPE	DATA TYPE (indicator in data quotations)	DATA COLLECTION	NUMBER OF ITEMS	NUMBER OF CODED ITEMS
Document	1 Students' emails (email)	Oct 2011 – Jan 2013	208	507
Document	2 Students' stories writings (story)		31	183
Oral	3 Participant observation notes from one-on-one student consultancy sessions (individual consultancy)		64	64
Oral	4 Participant observation notes from classroom situations (classroom situation)		145	145
	TOTALS		448	899

The choice of codable units, for example, a turn or a sentence, is an important analytical decision made based on the most meaningful unit for a particular research project (Meyer & Avery 2009, 95). In this study, students' emails, stories and observation notes were broken into codable units based on meaning: each coded unit contained one codable meaning. To ensure that the codable unit did not lose its connection with the respondent's original email, story or observation note, each of these was given a unique alphanumeric code serving as the identifier of the original full text (e.g. sto4 indicating an excerpt from story 4). The order of the codable units within the original text was kept intact by allocating each table row a unique number in ascending order, and placing the codable units from a single response in the order of the original response below each other with a clear indication that the coding of the previous unique codable unit was continuing.

The decision on the tool to handle the data with is an important one. There are several computer assisted/aided qualitative data analysis software (CAQDAS) products available (e.g. QDA Miner, ATLAS.ti, Nvivo and CAT (Coding Analysis Toolkit)). These are not necessary for skilled data analysis, however. Meyer and Avery (2009) consider Microsoft Excel well suited for tracking mixed data sources, for conducting transcription analysis, and, specifically, for emergent coding, such as, the constant comparative analysis in GT. Meyer and Avery consider Microsoft Excel a tool that helps solve the QDA challenge of tracking (connecting one piece of data with another), while preserving the richness, complexity and interconnectedness of data. Excel can "handle large amounts of data, provide multiple attributes and allow for a variety of display techniques" (Meyer & Avery 2009, 91). The data analysis in this study was conducted in Microsoft Excel as exemplified by Meyer and Avery (2009) in terms of the use of multiple tables within one

file, the structure of the coding table, and the preparation, analysis and presentation of data. Each table row formed a record and each column a specific attribute of the data (Meyer & Avery 2009, 97). One table was used to store and code the data, and another table in the same file was used for GT memoing.

In the analysis table, the raw data was placed in the middle column surrounded by identification codes to the left and analytical codes to the right. Table 2 is an excerpt from the data analysis table that comprised a total of 899 data rows. Three identification codes were used to the left of the raw data. ITEM # column allowed the issue of a unique number to each row in ascending order. DATA TYPE column indicated the type of data. These were: EMA (email), STO (story by student), CON (one-on-one consultancy session observation) and CLA (thesis planning course classroom observation). DATA ID column indicated what larger piece of raw data the data on the row originated from in cases where a longer email or story needed to be broken into several codable units. Respondent labels were not utilized to ensure complete anonymity of the data during the analysis.

"Substantive codes conceptualize the empirical substance of the area of research" (Glaser 1978, 55). The substantive data analysis was conducted utilizing the three basic analytical activities described by Glaser (1992, 38–88) (figure 4 in chapter 2.1.). The analytical codes were developed during the analysis in several stages as the analysis proceeded step by step into greater conceptual depth through phase 1 initial/open coding for indicators and properties, phase 2 axial coding for categories, subcategories and their relationships, and phase 3 selective/theoretical coding to attain theoretical integration. When the question about possible communication chains arose, an additional column was added to analyse the path and direction of communication or emotion between the various stakeholders.

TABLE 2. Excerpt from the Excel data analysis table.

	A	B	C	E	F	G	H	J
1	IDENTIFICATION CODES			RAW DATA	ANALYTICAL CODES			
2					SUBSTANTIVE CODING		THEORETICAL	
3					PHASE 1	PHASE 2	PHASE 3a	PHASE 3b
4	ITEM #	DATA TYPE	DATA ID	RAW DATA DATA QUOTATION (Indicators)	INITIAL/OPEN CODING (Properties of content)	AXIAL CODING (Categories, subcategories and their relationships)	DIRECTION OF COMMUNICATION/ EMOTION	THEORETICAL/SELECTIVE CODING (Integration)
70	69	CLA	cla	Will this topic be interesting enough to get a good grade?	for a high grade	Student motivation	Student -> Staff	Student's Internal experience
71	70	CLA	cla	Can I get a 4 or 5 with this topic?	for a high grade	Student motivation	Student -> Staff	Student's Internal experience
72	71	CON	con	The comp is so happy I'm doing this research for	satisfaction with company	Student emotion	Student internal	Student's Internal experience
73	72	CLA	cla	I've been working for them (comp) earlier and they said they'd be happy to give me a topic.	eager to work with thesis students	Company motivation and commitment	Company -> Student	Student's emotion toward social experience
74	73	CLA	cla	I've been working for them (comp) before and they said all I need to do is to tell them what I want to do and it's ok for them.	eager to work with thesis students	Company motivation and commitment	Company -> Student	Student's emotion toward social experience
76	75	CLA	cla	The comp asked for some guidelines and instructions on what they should do next.	procedure with thesis students	Company information needs	Company -> Student -> Staff	Company competence
77	76	CON	con	They (comp) want a letter from the school that I'm doing a thesis. Otherwise they wont take me.	require proof of thesis student status	Company information needs	Company -> Student -> Staff	Company competence
78	77	CLA	cla	They (comp) said that they will maybe use them to some degree but they need to see the results first.	maybe use the results	Company motivation and commitment	Company -> Student	Company commitment

Data collection was guided by the search for new properties and indicators as well as the saturation of existing tentative categories, properties and relationships. There was a continuous focus on constant comparison of incidents, properties, categories, concepts and their relationships with each other across thesis planning workshop implementations, across consultancy and class sessions, and across respondents in order to establish the "dimensional range of variation" – the sameness and variation – in the data (Corbin & Strauss 2008, 155). In consecutive rounds of collection, comparison and coding, tentative categories, subcategories and properties started to first emerge through *in vivo codes* arising from the respondent's own expressions. Gradually, the *in vivo codes* and other codes were thematized and reduced (simplified) by focusing on the essential aspects present in the data (Moilanen & Räihä 2001, 53). Overall, the lower level categories and properties of categories emerged early on in the data collection process, whereas the "higher level, overriding and integrating" categories and conceptualizations arose later in line with Glaser and Strauss' (1967, 36) description and were much harder to conceptualize and formulate. Eventually substantive coding had advanced to where selective/theoretical coding could be used to "conceptualize how, the substantive codes may relate to each other as hypotheses to be integrated into the theory" (Glaser 1978, 55).

The elements of a theory that the GT process aims to establish include conceptual categories, their conceptual properties, and the generalized relations or hypothesis about the relationships between the categories, and categories and their properties. The integration of these elements into a grounded theory should emerge from the iterative theoretical sampling, data collection and comparative analysis process. The goal is a theory that integrates "the fullest range of conceptual levels". (Glaser & Strauss 1997, 36–41.) To get to the fullest range of conceptual levels, the researcher develops hypotheses about the elements of the emerging theory during the joint data collection and comparative analysis, and it is these hypotheses that drive the GT process (Glaser & Strauss 1997, 39–40). Questions recommended by Glaser (1978, 57) were used throughout: "What is this data a study of", "What category does this incident indicate?", "What is actually happening in the data?" and "What is the basic social psychological process or social structural process that processes the problem to make life viable in the action scene?" As the data analysis progressed further, some of the many questions that emerged to drive theoretical sampling were memoed as follows:

- What is happening in the thesis student's mind during this process?
- Thesis students say they feel, what exactly to they feel, toward what/whom, and why?
- Thesis students say they think, what exactly do they think, about what, and how?

- Students say they cannot do, what exactly, when and why?
- How are the thesis student's mental processes and behavior interacting?
- What do the thesis students perceive that the stakeholders do?
- How are the stakeholders influencing the thesis student's experience?
- What kinds of reactions do students have toward other stakeholders' behaviors?
- Are there complex multi-step communication chains ongoing in this process? If so, what are they? What generates them? What is their role in solving the problem at hand?

The theoretical sensitivity of the researcher, his ability to "conceptualize and formulate a theory as it emerges from the data", is a continually developing competence (Glaser & Strauss 1997, 46). During the analysis I made sure not to commit myself exclusively to a single preconceived theory (Glaser & Strauss 1997, 46) so as not to lose my theoretical sensitivity. When familiar disciplinary concepts and models from psychology and education appeared as the obvious ways to organize the emerging theory, I returned time after time to the question "But is this what the data tells me, or is this my way of conceptualizing phenomena as a practitioner in psychology and education?" I also often found myself critically asking, whether I was analysing data as the students' teacher and advisor, or as a more detached researcher; and which role might be the more conducive one for a sensitive analysis. Briefly put, I continually second-guessed my way to approach the analysis in order to avoid familiar disciplinary models from taking over.

Memos have been a core analytical tool since the beginning of GT research (see Glaser & Strauss 1967, 113). "Memos are the theorizing write-up of ideas about codes and their relationships as they strike the analyst while coding" (Glaser1978, 83). The researcher writes memos throughout the research process making notes about his thoughts, questions and hypotheses as they arise. These notes can "vary in subject, intensity, coherence, theoretical content and usefulness to the finished product (Birks & Mills 2011, 10). In this research, the concurrent and iterative data collection and coding process was supported by memo writing from the beginning of the research (figure 4 in chapter 2.1.). In this study a total of 63 memos were written to support the development of emerging categories, properties and their relationships, and the eventual formulation of the substantive theory. Below one such memo illustrating a key point in integrative decision-making.

TABLE 3. A sample memo.

	A	B	C	D
1	MEMOING			
2	#	MEMO DATE	MEMO TYPE **Core** category; **Links** between categories; **Links** between properties & properties or categories; **Saturation** point achieved; **Scope** of research; **integration** into theory	MEMO
55	51	12.11.2012	Links between categories and integration into theory	It appears that no matter how hard I aim to stay away from psychological concepts, the human internal experience is reducible only to the internal mental categories of wanting (motivation, conation), thinking (cognition, metacognition) and feeling (affect, emotion). The overwhelming number of verbalizations expressing these categories is so self-evident I cannot but accept the established psychological terms as part of the emerging theory. It would have been too revolutionary to find any other internal processes, of course. From the viewpoint of the emerging theory, the focus here is on the contents and targets of these mental processes, the properties and dimensions of what is motivating, what is being thought of and how, and what is being felt. The challenge here is that there is such a variety of targets for these activities that it is very easy to end up with a wide and disparate a battery of properties and dimensions. I have two options, I can express all the variety expressed by students, or focus on the key properties, and scale and condense them up into property groups. Parsimony is a key feature of an elegant theory according to Glaser and many other theorists on theories. I think that to resolve this internal confusion on this matter, I need to prepare two versions of the theory: a full-blown one with the descriptive detail available, and a more elegant parsimonious one. The question I keep asking myself is whether to opt for parsimony or not: Would it be a more truthful and informative theory if I opted for the mixture of variance even at the price of losing sparcity. The other thing that itches in my brain persistently is the social aspect of the theory. Is it clear enough to connect the internal mental processes (triangle) to social processes and stakeholders (diamond)? And, adding insult to injury, preparing the more descriptive QDA version of the theory including this adds even more variety and richness. I am afraid that opting for too much rich description makes the dynamics of the theory disappear in a forest of details. How to present a truthful theory!

In GT, the sampling process is concluded when the each theoretical point in the emerging grounded theory has been theoretically saturated. Theoretical saturation is achieved when the analysis of new data fails to yield new theoretical categories, subcategories or properties of categories. This is an indication of good diversity of data, that is, the variety of data bearing on the theoretical categories of the emerging theory have been successfully maximized, and new data are unlikely to yield any additional information to enrich the theory under design. (Glaser & Strauss 1967, 61–62.) In this study, theoretical saturation was reached early on during the fifth implementation of the thesis planning workshop. Categories, subcategories and their properties, and the dimensions of properties started to repeat without yielding new insights. The relationships between the components of the emerging theory were not altered by further analysis. As a result, the data analysis did not lead to new questions whose answers to pursue through theoretical sampling.

The following chapter presents the substantive theory that emerged through the GT processes described in this chapter.

3 BEGINNING THE DISSERTATION JOURNEY: A GROUNDED THEORY

This chapter presents the substantive grounded theory that emerged from the data collection, data analysis, theoretical sampling, saturation, memoing and integration processes discussed in the previous chapter on methods. I start with a brief metadiscussion on how the outcomes of GT processes should be presented, and justify the approach taken here (3.1). This is followed by the main outcome of this study: the substantive grounded theory of the undergraduate UAS business student's experience in the thesis planning stage (chapters 3.2 and 3.3). Chapter 4 thereafter places the substantive grounded theory into the context of prior literature on UG research experiences. The division of chapters 3 (research outcome) and 4 (relating the outcome to existing literature) allows the substantive grounded theory emerging from this study to to stand alone, before comparison with other studies

A few technical points are worth noting. Direct quotations from the data are followed by a data type indicator as follows: students' emails (email), students' stories (story), participant observation notes from one-on-one student consultancy sessions (individual consultancy), and participant observation notes from classroom situations (classroom). Any information possibly identifying either a student or a company has been removed. To avoid unnecessary repetition, beginning (Dear, Hello, Hi) and concluding greetings (sincerely, BR, (kind/best) regards, yours) have been left out from the email quotations.

3.1 Integrating and presenting grounded theories

Once a grounded theory has emerged, a decision has to be made about how to present it. In this chapter, I take up four related issues: the format for presenting a grounded theory, the role of context in the theory, conceptualization versus description, and forcing.

> *Our strategy of comparative analysis for generating theory puts a high emphasis on theory as process, that is, theory as an ever-developing entity, not as a perfected product. […] To be sure, theory as process can be presented in*

> *publications as a momentary product, but it is written with the assumption that it is still developing. Theory as process, we believe, renders quite well the reality of social interaction and its structural context.* (Glaser & Strauss 1967, 32.)

A theory is "an explanatory scheme comprising a set of concepts related to each other through logical patterns of connectivity" (Birks & Mills 2011, 112–113). A grounded theory is always integrated theoretically around a core category to which categories, and their properties and dimensions link (Corbin & Strauss 2008, 263). A grounded theory can be presented "either as a well-codified set of propositions or in a running theoretical discussion using conceptual categories and their properties". The authors of the first GT guide preferred the discussional form to stress "theory as a process", where the theory is "an ever-developing entity" not a perfected product. (Glaser & Strauss 1967, 31–32.) Later GT theorists and researchers have proponed combining the discussional form with tabular and/or figurative visual modelling through diagrams (Glaser 1978, 81; Urquhart 2013, 163–168), and illustrative modelling (Birks & Mills 2011, 140–141). The outcome of this study is presented through visual modelling, analytical discussion and quotations from data to illustrate the emergence of the categories, their dimensions, and the relationships or connectivities between the categories. In the center of the visual model is the core category "getting done with the thesis plan" or "putting the plan together" to which two secondary core categories, their categories and properties with dimensions are linked. As recommended by Birks and Mills (2011, 134–135), firstly, the theory is briefly presented as a whole before going deeper into its components, and, secondly, the theory is presented in a separate chapter from extant theory and research literature to allow it to stand on its own right.

The role of context in the emerging grounded theory and the level of detail for reporting it has been debated. Charmaz (2006, 180) argues that "situating grounded theories in their social, historical, local and interactional contexts strenthens them". Urquhart (2013, 153) exhorts the researcher to use contextual description to anchor the grounded theory in the data and make it understandable, but warns that too much description may turn the emerging theory into a "nice story". Context can be described from the viewpoint of **macro** conditions (socio, political and historical conditions) and micro conditions (immediate day-to-day conditions) (Corbin & Strauss 2008, 230) in which the problem resolution process is embedded.

The delimitations of the study (before the GT analysis process) were illustrated in figure 3 in chapter 1.7 using the conditional/consequential matrix of Strauss and Corbin (2008, 94). As a result of the GT process a more detailed understanding of the conditional/consequential dynamics developed. Figure 5 shows a simplified analysis of what I would term "the scenic setting" for the theory, that is, the key components of the wider context influencing the respondent's problem

resolution activity. The macro conditions include the national HE legislation and policies that set the curricular requirement of a bachelor thesis, the national RDI strategy and policies that aim to support the development of regional businesses and economy through UAS RDI operations, including student theses, the HE financing instrument that rewards for commissioned student theses[24], and the state of the economy, which influences students' opportunities to locate a commissioning organization. These conditions set the scene for the micro conditions, which include the thesis process requirements of both the UAS and the degree program the student is enrolled in, the pedagogic processes supporting the student in the thesis process, and the needs of individual commissioning organizations for student RDI.

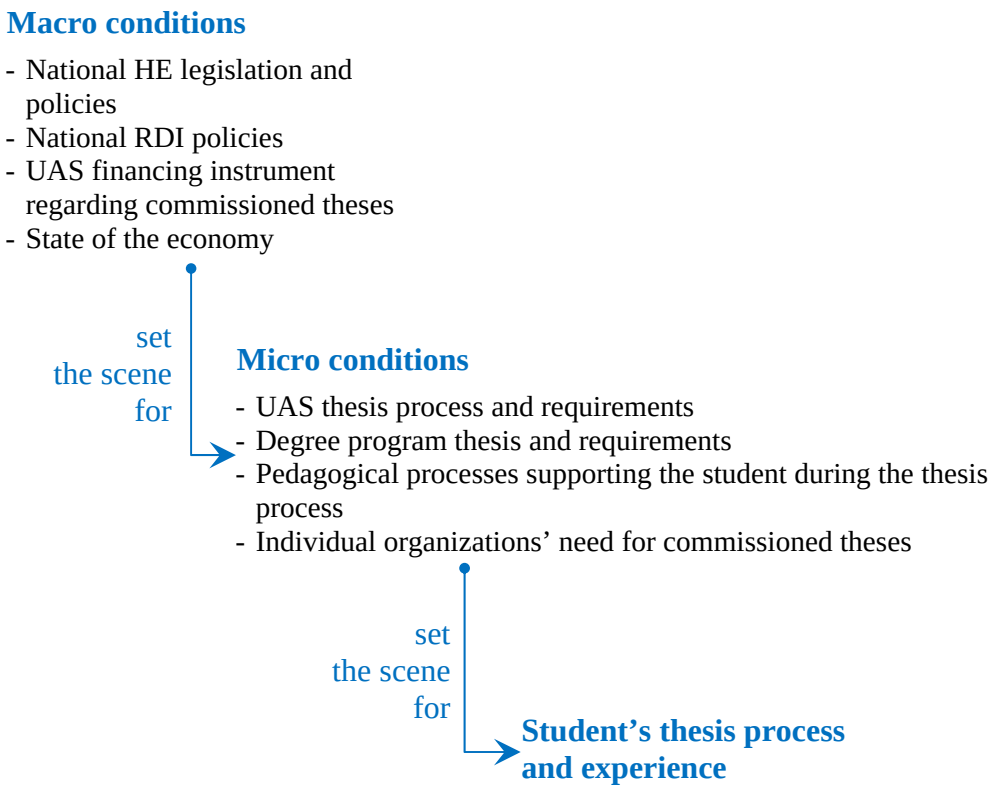

FIGURE 5. The "scenic setting" for the substantive grounded theory, that is, the key components of the wider context influencing the respondent's problem resolution activity.

In my opinion, the documentation and presentation of the scenic setting for the substantive grounded theory presented in this study is crucial, because changes in the setting would unavoidably result in changes in the student experience. The impact of the degree programme

[24] It should be noted that the role of commissioned theses in the financing instrument was more prominent at the time the data was gathered for this study. At the time of reporting, the role of commissioned theses had decreased, while it still remains an important goal in HE and RDI policy.

requirement, or strong preference, for a commissioned thesis emerged a major experiential element.

In doing GT, the research outcome is always about conceptualization, not solely about description.

> *Maintaining the conceptual level of GT is not easy. The drift into description is ever present, as well it should be, since we all view our world in desription. […] Knowing in GT is theoretical and in QDA it is descriptive. (Glaser 2001, 35.)*

The grounded theory presented here aims to conceptualize the student's experience of the thesis planning processes. The categories, their properties and dimensions, and the relationships between categories emerged from the analysis of the students' own verbalizations while engaged in the process. Chapters 3.2 and 3.3 present students' voice through data quotations in a manner that may, to some readers, resemble more QDA than GT. The discussion delves into the students' problem resolution and social processes throughout, however, as is required in GT. Additionally, the data quotations facilitate maintaining robust grounding between the data and the emerging theory, that is, illustrating where the conceptualizations arose from.

And, lastly, Glaser as the proponent of the original form of GT stresses that all grounded theories must emerge from the data without forcing it through any conceptual tools such as Corbin and Strauss's conditional matrix describing various types of conditions and consequences (Glaser 1992, 96–98). To consciously remain outside the acrid debates between Glaser and Strauss over which form of GT is the authentic one, the emergent theory was integrated an sich as it emerged from data, and only thereafter examined in the light of extant theories and models in chapter 4. This allowed a moment of *istigkeit* (using Meister Eckhart's term) for the substantive grounded theory before placing it in the context of disciplinary literatures.

3.2 Part 1: Internal experience from internal mental processes

> *Grounded theory accounts for the action in a substantive area. In order to accomplish this goal grounded theory tries to understand the action in a substantive area from the point of view of the actors involved. This understanding revolves around the main concern of the participants whose behavior continually resolves their concern. Their continual resolving is the core variable. It is the prime mover of most of the behavior seen and talked about in a substantive area. It is what is going on! It emerges as the overriding pattern.* (Glaser 2001, 99.)

The action accounted for from the point of view of the key actor in this study is the processes business students experience or undergo while planning a UAS bachelor thesis. The focus is on

examining what students' own verbalizations, both oral and written, tell about their experience. The prime mover of behavior and the key concern being resolved as expressed by students was

> *[…] putting the plan together. (email)* OR
>
> *[...] getting the thesis plan done. (classroom)*

"Putting the plan together" was used by students with a neutral or positive attitude toward the thesis process. "Getting the thesis plan done" was an expression mainly used by students holding somewhat negative attitudes toward the thesis. This key concern or core category was named *getting done* (figure 6).

Around the core category if *getting done*, the analysis revealed two experiential processes or secondary core categories that were inextricably and very dynamically intertwined throughout, making them fundamentally inseparable from each other. To maintain structure and clarity in reporting, this chapter covers the first of these, the student's *internal mental experience* resulting from three *internal mental processes.* These three processes focus on the student himself and on the various inanimate targets the student *wants*, and *thinks* and *feels* about. The *internal mental experience* results in *getting done* or not getting done, which, in turn, influence the *internal mental processes* through a feedback loop. Chapter 3.3 turns to the second secondary core category, *the social experience* resulting from *the processes of communication, interaction and collaboration* the student engages in and experiences through the the action of *doing,* while putting the plan together.

Getting done with the thesis plan was in many students' experience connected to some *future doing* in studies, planned career or life. This gave rise to the *future doing* category linked to the *getting done* category.

The subcategory names for the *internal mental processes* are based on *in vivo codes*, that is, expressions students used themselves, such as the following (terminology leading to *in vivo codes* including action terms indicating doing are underlined).

> *[…] this business idea is something I really <u>want to make it done</u> so I <u>think</u> it would be a great <u>motivation</u> for me. […]* (email)
>
> *[…] The two books not highlighted I <u>will take</u> out on loan today however first one seems to be a known practitioner on the subject so I <u>was thinking</u> whether or not it would be worth <u>purchasing</u> one of his books seeing as there are only a few copies which I <u>may never get</u> a hold of. Anyways I really <u>want to</u> […]* (email)

> *[…] I am taking Thesis planning workshop course, and at the moment I feel lost. I'm worried about whether I can think about all the things in the right way cause I'm just a very practical kind of person. […]* (email)

> *Is this too common a topic. Everybody does market surveys. I want something more interesting, maybe.* (classroom)

These data quotations reveal the main four subcategories either directly or indirectly. *Wanting, thinking* and *feeling* appear repeatedly in the data when students discuss these internal mental processes with faculty and with each other. These internal student experiences were visualized into a triangle of *internal mental processes* (figure 6).

The circular arrows in the figure illustrate the continuous interaction of one internal mental process with another in the same category, and the double-ended arrow the interaction between one or more other internal mental processes. Getting *done* is powered by the internal mental processes, follows as a result of them, and also influences them through a feedback loop represented by the double-ended arrow.

Getting done with the thesis plan was in many students' experience connected to some intended *future doing* in studies, planned career or life. This gave rise to the *future doing* category linked to the *getting done* category. The categories influenced each other. For example, an accounting and finance student who intended to continue to a master's program in financial management after graduation and was hoping to join a specific company could choose the research type of thesis and a topic that required much independent study into a phenomenon not covered in the curriculum. In these cases, the bachelor thesis took an instrumental function as a learning tool, and a stepping stone into the next level degree program and a career in a specific company.

The quotations below illustrate some of these interactions with the interacting components underlined. Each quotation is followed by a brief analytical note explicating the interactions between the categories.

> **Set 1**: The category of *wanting* something in the thesis planning process in order *feel* something, or to *get* something *done in the future.*
>
> *I want a topic that will make me feel like I'm doing something worth all the effort and that can help me get a job in […].* (classroom)
> [→ Analysis: *wanting* in order to *feel* about *doing* and *to do in the future* (get a job)]
>
> *I am applying to a master's program in a uni after this and want to work on something that is useful for that.* (individual consultancy)
> [→ Analysis: *wanting* in order *to do in the future* (to apply)]

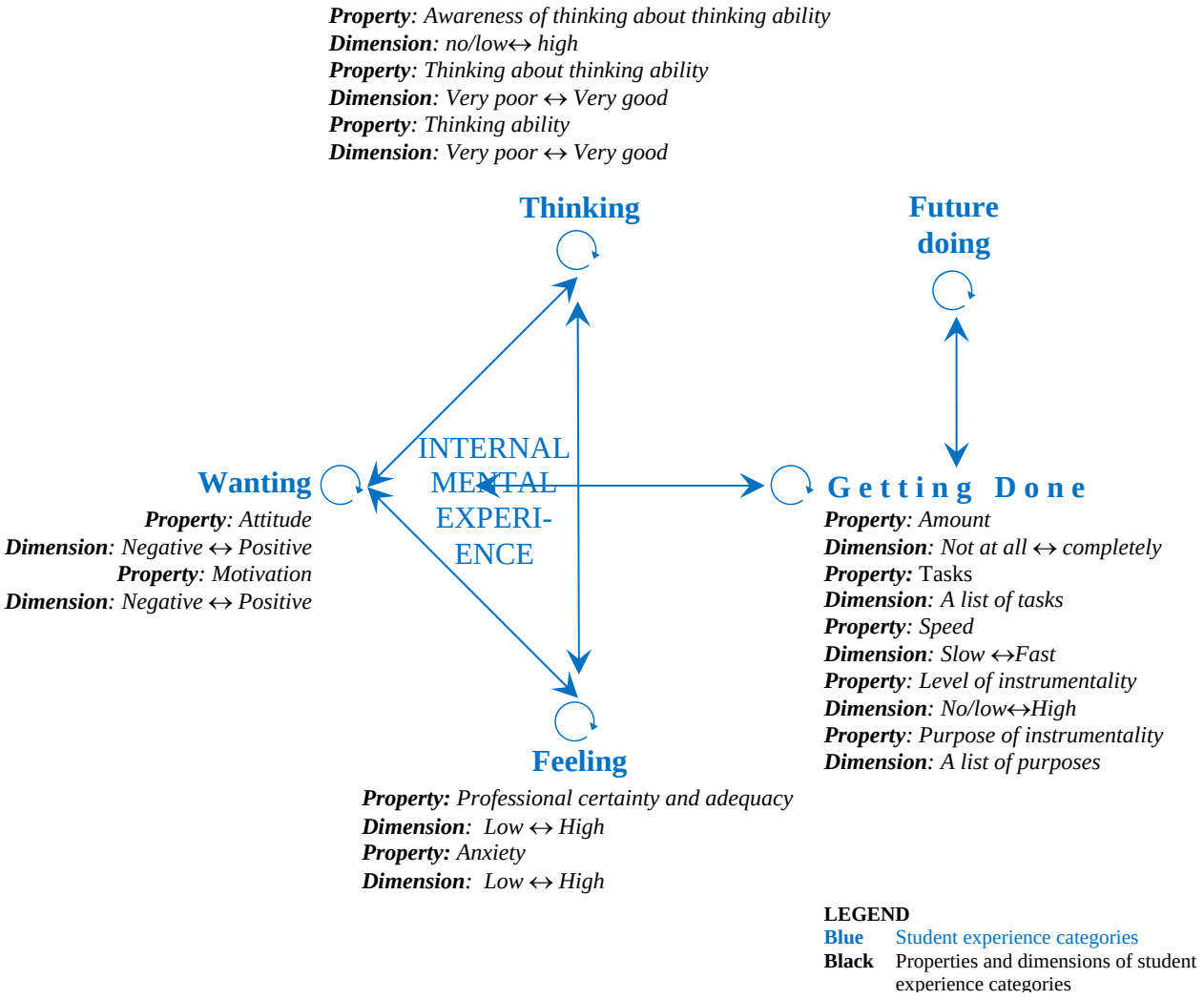

FIGURE 6. Interacting internal mental student processes or categories (*wanting*, *thinking*, *feeling*) in the thesis process resulting in *getting done* and vice versa. Each category has properties along a dimension.

> *I'm going to continue to a master's program in finance because I want to end up working for [a company name]. I'm interested in investing but we haven't had much of it in our courses. So I was thinking that I'd like to do a desktop research on [topic] to learn more about it. It would give me a head start into the master's programme and make it easier for me to get in.* (email)
> [→ Analysis: *wanting* in order *to do in the future* (to work, to learn, to study,)]

Set 2: Interactions within the *getting done* category. *Doing* tasks required in the thesis process in order to *get the thesis plan done*.

> *After our discussion in the extremely useful briefing during the last session (thank You!), I have been studying and searching for books that could be useful for my theoretical framework. I have contacted the libraries of [library names] requesting them the availability of service design books, especially those that are*

concentrated on designing travel services. I am still waiting for a reply from the library. (email)
[→ Analysis: *doing* ("discussion") leading to a sequence of doing with a purpose ("studying", "searching", "contacted", waiting")]

Set 3: Complex interactions between the *feeling*, *thinking*, *wanting* and *doing* categories in the thesis planning process.

I am happy to tell you that [company name] wants to have a meeting with me about thesis topic. I don't feel too sure about my ability to do all they maybe want, but I can't wait to meet with them and get to talk about the topic. (email)
[→ Analysis: *feeling* ("happy") followed by *feeling* ("not feel … sure") followed by *doing* ("to meet", "to talk")]

I feel kinda bummed. Today I received a list of possible thesis topics from [company name]. To be honest, I was expecting more and therefore, none of the topics really got me motivated. I was wondering if we could have a quick meeting after our class on Tuesday to see if there is something interesting in the suggestions after all? Have a good weekend! (emai)
[→ Analysis: *doing* ("expecting") followed by *doing* ("received") followed *wanting* ("none … motivated") followed by *feelings* ("bummed") leading to *thinking* ("wondering") about *doing* ("meeting") in order *to do* ("to see")]

I feel so confused and really frustrated after the case company pulled out all of a sudden. I worked so hard to negotiate with them. And the topic was just what I wanted. Soooo motivating that I would have worked for free on it! It feels like cannot think straight anymore. So I can't get anything done either. I really need and want to talk with you about what to do so that I can keep moving forward. (email)
[→ Analysis: *doing* ("worked … hard to negotiate") combined with intending *to do* ("would have worked for free") causing ironic *wanting* ("soooo motivating") followed by company pulling out and resulting in *feeling* ("confused", "frustrated") resulting in *wanting to do* ("want to talk") in order *to do* ("keep moving forward")]

Exemplifying systematically all the possible interactions within and between the four categories would require dozens of quotations. Additionally, the quotations above have much unsaid but clearly existent between the lines, such as, expressing intended *doing in the future* without expressing the underlying *wanting*[25]. Since the analysis here relies on actualized verbalizations, such unverbalized processes, naturally, cannot be included in the analysis. Due to these two problematics and in the interest of brevity, I present only a few quotations here, selected based on their ability to illustrate, on the one hand, simple interactions (sets 1 and 2) and, on the other hand, more complex ones (set 3). Set 2 illustrates sequences of targeted doing, which was common in

[25] For example, in the second quotation in set 1, a person wants to get a higher degree, and, therefore, applies to a master's degree program. The quotation does not express the *wanting* leading to the intended *doing*.

student emails sent to faculty to report on progress since the latest meeting, and to request faculty advice or tips. Set 3 unfolds a rich mixture of interactions between feeling, wanting, thinking and doing, and within each category. The first quotation in set 3 exemplifies elation followed by harder to manage feelings typical in students who were excited about their theses and wanted to challenge themselves, perhaps a bit further than their competences yielded. The second and third quotation in set 3 are typical examples of the negative internal turmoil common in students facing obstacles and disappointments in their negotiations with potential commissioning organizations. Lower cognitive ability and lack of social skills also typically resulted in internal and behavioral turbulence due to lack of advancement in the thesis planning, and vice versa

Each of these four secondary categories had properties indicating what the wanting, thinking, feeling, or doing was targeted at. Each property, in turn, had dimensional components detailing the quality of the wanting, thinking, feeling, and doing. These are explored in more detail in the following four subchapters.

3.2.1 Wanting

Let's start with the question what students *wanted*, that is, what motivated them, during the thesis planning process, and what the wanting or motivation was like in terms of quality. Since *motivations* are embroiled with and also reflect *attitudes*, these two formed the properties of the *wanting* category. Attitudes and motivations formed the underpinning dynamic to resolving the problem of *getting the thesis plan done*.

Students verbalized the property of *attitudes* on a negative–positive dimension toward the thesis requirement as a legislated part of the UAS degree, the idea of a commissioned thesis, the timing of the thesis on the fifth study semester, the international aspect requirement to the thesis topic, the Thesis Planning Workshop as a curricular requirement, and the pedagogical choices made for the course. The negative expressions were in the minority and were mostly expressed in class both in class discussions and individual discussions with the researcher.

> *Why do we have to do a thesis?* (classroom)
>
> *Do I have to get a commissiong company? Can't I just write about … something … what ever.* (classroom)
>
> *Do I have to have an international business aspect to the topic? I'm not interested in trying to look for topics like that. I think that I can get a domestic topic much easier.* (classroom)

> *Why do I have to start the thesis now already? Can't I do the thesis in a month or two?* (classroom)
>
> *Why do we have to attend a thesis planning workshop?* (classroom)
>
> *I don't think the workshop is going to help me. No one can teach another person to do research.* (classroom)
>
> *What's the point of talking the plan over with other students. They don't know any more than I do. It's a waste of time.* (classroom)

Students also expressed *motivations* on a negative–positive dimension. Interestingly, there was a group of conditions that generated expressly high *motivation* levels in many students. Some were inspired by learning more about a specific topic of personal professional interest, the desire to work for one's own start-up or a family business, or simply by the need to challenge themselves more than colleagues who were opting for easier well-worn topics. Others were eager to start the thesis to speed up graduation and/or to use the thesis as a planned part of later master's studies. Yet others were building their CVs and wished to advance their careers by working for a company on their "wish list".

> *[…] All in all, I believe that writing and finalizing my thesis will not be an easy task. However, I think that I will learn a lot from this experience and I will successfully deal with all the challenges. […]* (story)
>
> *The fever has got me for days, and I have to stay in bed eventhough the sun is shining. So here is what I prepare for this session. I also would like to ask your suggestions about these two ideas of thesis topics: [three topics listed and explained in depth]. For the first topic, the case organization can be varied. But the second one, […]. So what do you think about those two? Really look forward to your advices :) […]* (email)
>
> *I did a master's thesis before this and I wish we had had this kind of a planning workshop to make the whole process more structured and understandable.* (classroom)
>
> *I have some questions in regards to thesis. Do we have to have a specific company to do the thesis for or can it be a more general outlook on something that will change the way logistics will work in the future? I have a subject that I have been interested in for some time that will change the way logistics and purchasing will function in years to come. Here is what I am referring to [link to a professional site]. I would like to write my thesis on the impact this technology will have on the field. [continues to expound on the topic with thought and logic]* (email)
>
> *Finding a topic for the thesis was very easy, since I have been thinking thesis topics for the past year. As I working in the family business and I have a need for*

> *conducting marketing research that would help me to develop company's businesses even further. […]* (story)
>
> *Is this too common a topic. Everybody does market surveys. I want something more interesting. I think that its important to find something more out of the way so that I won't start feeling like blaah in the middle of the writing.* (classroom)
>
> *I would like to schedule an appointment with you to discuss about my thesis process. I haven't officially started it yet, but I have thought about some possible thesis topics. I would love to start the process as soon as possible to get my degree done earlier than scheduled (if possible) :) Thank you for your response!* (email)
>
> *I'd do any topic for this company. I just want to work for them! I think they can offer me a really motivating topic and opportunity to show what I can do. Maybe they'll offer me a job too if I do well.* (individual consultancy)

What is striking in this list of motivators is their internal quality: the strongest positive motivation sprang from the students' internal attitudes, beliefs, learning goals, and study and career plans. And, in an opposite dynamic, negative *motivations*, that is, the lack of motivation, appear to spring from students' perception of external demands – "have-to's" – when these internal motivators are absent. These negative drivers included the strong encouragement to get a commissioned topic, and the requirements to complete a thesis, to work on a topic related to the student's field of professional specialization studies, to have an international aspect in the topic, to have to complete the thesis planning workshop by completing tasks, attending contact sessions and collaborating with peers, especially with peers from other professional specializations. Those with high positive internal motivation perceived these external demands as motivating or demotivating depending on the individual situation.

> *I don't want to do a thesis. Is there no way not to have to do it?* (classroom)
>
> *I think that having a commissioning company just makes thinks more difficult. I don't want to have to get one.* (classroom)
>
> *I have the perfect topic with a capital P from this company I really REALLY want to work for, but it's completely domestic because the company is an SME without any international operations. Is there some way to get around the international requirement so that I can keep this topic?* (email)
>
> *I've decided not to start the thesis on this semester. I know I'm supposed to but I really feel I'll be better and benefit more from the thesis if I do it after semester 6 when I've completed all my specialization courses? Do I have to start now?* (email)

> *I don't have time and I don't want to attend a stupid thesis planning workshop. Can I just do the plan? I don't need no help. The whole plan isn't important in the first place.* (classroom)

These quotations are a good example that, as stated before, each category is inextricably intertwined with others. Inside the *wanting* category, *motivations* are dependent on *attitudes*, and both of them are dependent on *thinking*, *feeling* and *doing*.

3.2.2 Thinking

Next we move on to exploring what students *thought* about, that is, what their reasoning mind was preoccupied with. Here students' expressions contained two main properties.

Firstly, there were verbalizations indicating an *awareness of thinking about thinking ability* varying along the dimension no/low–high, and the actual *thinking about thinking ability* varying along the dimension very poor–very good. A talented minority of students had a high *awareness of thinking about thinking ability*. This tended to combine with good to very good *thinking about thinking ability.* Those that did not express *awareness* of the ability, rarely expressed anything showing their *ability* in it either. This means that such cases were "present" by being absent from the data. These students tended to have problems with advancing in their thesis plans. In a small number of students, this lack of *awareness* and *ability* combined with a reluctancy to participate in the thesis planning workshop or to receive faculty advising.

Through their *thinking about thinking abilities* students revealed how they thought about their thinking, and what they observed in their mental processes while thinking about thesis related issues. The category revealed what students believed and thought about their methods and processes of thinking and problem-solving, and their ability to engage in the thinking tasks required of a thesis student, including, setting research objectives, demarkating the topic, designing the theoretical framework, searching for and selecting literature, and academic writing. Below quotations from students with strikingly advanced *thinking about thinking awareness and ability*.

> *Can you help me with this? I just don't know how to think about this thing. I have tried to use the demarkation principles you showed, but I cannot seem know how to think through some of them. Because of that I can't be sure if I they are relevant to my demarkation or not. Usually I know how to choose a strategy to think, but not in this.* (classroom)

> *[…] Generally it is easy and fast to come up with many [research] objectives, but the challenges lays on gathering them into one single object which constitutes the main objective/problem of thesis. This phase can be very confusing. According to my experience, if thinking too much upon the objectives and the problem, one*

> *easily loses the track. I realized quite soon that I was losing myself the track, therefore I "stopped" over thinking, and I tried to write down anything that came to my mind related to the topic I wanted to write. […]* (story)

> *I have problems trying to remember that the design should have not only the contents but a logical route it follows - a direction. Because concepts in my head move to several directions this is a challenge for me, also because I don't like to compromise in the fear of something losing its meaning or the framework becoming too narrow. The thinking process I have to go through when getting advice regarding my theoretical framework is very educational though, it opens many new ways of thinking.* (story)

> *The draft takes me only some minutes, but fine-tuning the theory frame is another matter. Same theories and models usually form many different "roads" and logical patterns in my head, and making a combination of those has proven to be impossible. I understand it, but an outside reader doesn't. I have to pick one option which is difficult for me. In this process I have to return to demarcation and see what is really necessary. For this reason I always feel that as a theoretical framework the design is incomplete. However, as a theoretical framework for the research it is again "good enough".* (story)

Students in between the two extremes in their *thinking about thinking ability* were able to identify a problem with their "thinking about thinking" skills, but were not able to find alternative metacognitive strategies to surmount the problems.

> *How do I narrow this topic down - I don't understand how to do it. I can understand it and get it when you do it on the board – it's really clear, but when I should do it alone, I don't know nothing. (classroom)*

Secondly, there were expressions indicating actual *thinking ability* varying along the dimension very poor–very good. They showed students' ability to think, to work with cognitively challenging topics and persist through complex thinking processes. Both *thinking about thinking ability* and *thinking ability* are interlaced as the quotations in this chapter demonstrate. The data did, however, yield many verbalizations where one or the other process was more or exclusively in focus.

> *I am now attending the course thesis planning workshop. My thesis topic is about [a thorough analytical topic description]. I'm planning to use the three P's to approach the social accounting aspect of the topic. I am concerned about the scope of the topic right now. I think that writing accountancy theory from both the traditional and the social aspects is going to make too long and complex theoretical framework. I'm not writing an accounting textbook! Throughout my background study, I seem to digress from my initial plan and I need your consultation upon this issue. I wonder when it is possible for you to have a short-meeting on this. I need to cut down the scope of the problem and the theoretical frame. Thank you in advance!* (email)

The students differed widely in their *thinking abilities*, although they on the average were in the fifth semester of their bachelor degree studies with 100 or more ECTS completed out of the 210 ECTS required for the degree. Some level of *thinking ability*, however minor, was always necessary to achieve the objective of getting the thesis plan done. Those with very poor *thinking ability* were able to advance in the thesis planning only if advised by faculty through one challenge at a time. This necessitated several individual advising sessions in addition to class-based tuition and advising, and, thus, consumed much faculty time. Below some typical comments leading to requests for faculty advising.

> *This is all jumbled up in my head. I don't know what I should research.* (individual consultancy)
>
> *I just cannot get my head around this topic. It's all a muddle in my head. I cannot form the RQ [research question]*. (individual consultancy)
>
> *This is what's in my head right now. I tried to get it on the paper like this. Can you get it?* (individual consultancy)
>
> *I think that with everything getting a company to do the thesis for requires I'm going to stick to a desktop topic. I think it's going to be easier for me to focus on the topic and the books, and not to deal with any company.* (individual consultancy)
>
> *I finally found myself a thesis topic and would have few questions concerning it that could clarify my head and sort of help me see the scope of it all in all. Is it possible for you to meet me briefly? In the beginning of the next week?* (email)

The above quotations illustrate students with very poor to medium *thinking ability*, but – and this is crucial – with the motivation to seek assistance to resolve the challenges faced in the thesis process. Therefore, their thesis plans progressed step by step, although sometimes a little behind schedule. A small minority of students with very poor to poor *thinking ability* were, however, unwilling to accept faculty advising or peer feedback during thesis planning. These students commonly failed to deliver assignments and to meet deadlines. They claimed to need no assistance, and preferred to sit nonchalantly in class discussing issues unrelated to thesis planning if they came to class. As a consequence, from the faculty viewpoint, the quality of the thesis plans was quite poor. Yet, the students themselves often failed to see any problems with their thesis plans, their competences or their behaviour.

> *I don't have a topic. I'll get it when I get it – and I don't need help from no one. The whole thesis planning thing is a stupid waste of time. What does one need the plan for anyways! I can write the whole thesis in a week if I want.* (class)

To help bring the plans of these students closer to the lowest passing bar, extra individual advising was needed. Some eventually understood that they needed assistance and accepted it, others did not. At times, due to very long delays in the process, these students were given a pass for the planning workshop even though their plans fell short. In such cases, the students' future thesis advisors were notified of the deficient plan and the extra help needed. Students unwilling to accept advising in the planning stage tended not to get in contact with their eventual thesis advisors either.

Students with very good *thinking ability* discussed their topics and ideas analytically and in depth, and, often also, at length, inviting the faculty to discuss many challenges and ideas simultaneously. They were able to see the intertwined nature of the issues, and did not try to solve only one issue at a time, but rather explore many issues over a longer period seeking for the leverage points for problem solving. Below some examples: two brief enquiries with clear foci, and a longer involved discussional email.

> *I think I've go the RQ and IQs*[26] *ready now. So if you could please check below. Do you think these IQs are sufficient and support the RQ?* (class)
>
> *After having studied more literature, I have also become more able to come up with relevant questions regarding the main research problem. Can you comment on the following IQs: are they well connected with the main RQ, is the sequence logical, and does it seem that everything necessary is covered? [a list of investigative questions followed]*(email)
>
> *I e-mailed to you about […], thank you for the tip. I definitely plan to research international expansion and associated management practices as part of the lifecycle, as I believe this to be quite an important factor. Having very little prior knowledge of the topic, I would imagine that engaging in international operations and having offices and partners around the globe adds complexity to the case. The company is soon to reach the stage when growth will not be possible without a proper restructurization and role distribution.*
>
> *My biggest concern is being able to stay within the limits of management practices, without crossing the border with HR and psychology. If I am to join the ranks of business consultants, I would like to look at this as an actual business case that can be solved by thorough analysis and business model application. As in if an international company would approach me, concerned with "the business hitting a plateau or potentially going under because of the evergrowing dependance on the founder", what would my recommendations be?*
>
> *I would appreciate any suggestions on pointing the topic in the right direction.* (email)

[26] To speed up communication, abbreviations were introduced to students in the first thesis planning workshop contact session, and used in class and written communications thereafter as much as possible. These abbreviations were: research question (RQ), investigative question (IQ), project objective (PO) and project task (PT), theoretical frame of reference (TF).

The great majority of students placed somewhere between the two extremes in their *thinking abilities*. They recognized when they needed support and actively sought for it, but did not enter into a detailed analysis of the problem. Typically these students asked for assistance to brainstorm topic ideas, to decide whether the thesis was research-oriented or project/product-oriented, to design the research question and subsequent investigative questions, or project objective and subsequent project tasks, to demarkate the research question/project objective, to define the theoretical framework, to find and utilize literature, and to make methodological choices.

> *I finally found myself a thesis topic and would have few questions concearning it that could clarify my head and sort of help me see the scope of it all in all. Is it possible for you to meet me briefly? In the beginning of the next week?* (email)
>
> *I'm starting to understand what you said about the topic being too big and needing demarkation.What if I take […] out of the RQ and combine these two IQs?* (classroom)
>
> *I didn't know how much the topic should include for it to be good size.* (classroom)
>
> *Can I do the thesis on this topic or is it too small?* (classroom)
>
> *Is this this topic too big?* (classroom)
>
> *Can you tell me if you think this topic is it too shallow for a proper thesis?* (classroom)
>
> *Is it possible to do the thesis on this topic or is it too many different things?* (classroom)
>
> *Can I do the thesis on this topic or is it too complicated?* (classroom)
>
> *What method should I choose?* (classroom)
>
> *How big a sample should I have if I do survey?* (classroom)
>
> *How many people should I interview?* (classroom)
>
> *Can interview by phone or Skype or email?* (classroom)
>
> *Do I have to transcribe the interviews?* (classroom)
>
> *I'm needing help figuring out what concepts and models I could use for the theoretical framework. I kinda know what I'm supposed to use based on our courses, but I just cant put it together into a sensible whole.* (email)

The students purposefully seeking help for the problems illustrated above were attentive and thoughtful when faculty advising was offered. They had a clear focus on problem resolution and completing the given process writing task.

3.2.3 Feeling

After *wanting* and *thinking*, we can move on to *feeling*. What emotions did the students have about themselves and what were these like? Students' verbalizations crystallized into two categories along the dimension low–high: Feelings of *professional certainty and adequacy*, and feelings of *anxiety*. Low level of *professional certainty and adequacy* combined with high level of *anxiety* could result in, at times long, delays in getting the thesis plan done, or not getting it done at all. Low level of *professional certainty and adequacy* was a common experience among the full-time day students, whose majority was aged 18–25. In several verbalizations, the source of these feelings was located to the lack life and work experience, and incomplete higher education studies.

> *This is too demanding for me - I don't think I'm ready to do this kind of stuff yet or tell anyone how to run their business.* (individual consultancy)

> *I'm not ready to contact the companies yet. I must somehow be more to contact them. Read more, work more, know more – all of it. What if I got a great case company and have nothing to give them!?* (story)

> *[…] Could you please tell me how big this topic is, and especially whether the timeline is sufficient. I would definitely like to do it. I'm just not sure whether I I've got what it takes. What should I do to ensure that I reach my final goal? That is my feeling from the beginning on, that the research to get inputs from theory, employees' survey, managers' interviews, all that could be a research-based thesis, and then I will need to put those inputs into a concrete and tangible final presentation. For me, I cannot imagine how to come up with the final proposal without conducting firstly the research. Do you think it is doable?* (email)

A minority of students with extensive work experience and often also some prior HE studies felt a high level of *professional certainty and adequacy* and a low level of *anxiety*. They had realistic expectations of the thesis, a reasonable understanding of the effort and amount of work required, and felt quite comfortable with what they could offer through the thesis project.

> *In a way I feel really sorry for my commissioning company that I cannot deliver them the most comprehensive research that I would like, one that would include both: analysis on competitors AND consumers. However, I do know that by focusing the research only on competitors, I can go deep enough on the topic and also more likely will bring value to the company. One can never get it all at once, as they say. Good, solid results come in small bites instead. My thesis will be a*

> *tool for the company among others. I think it is much better to cover one area precisely than to tell a little bit of ten different phenomena in one paper.*
>
> *All in all, I have had to accept the fact that I cannot carry it all on my own or even give the company perfect answers that would magically just sweep their problems away. I can only find the data available, analyze it the best way I can, and perhaps give recommendations. If I can do this, I am going to be satisfied.* (story)

The preceding quotation serves also as a good example of a student who experienced little to no *anxiety* in the thesis process. Some level of *anxiety* was common, and students generally managed it purposefully. A minority felt a high level of *anxiety*, especially, when they could not find a commissioning organization, make a decision between several alternative topics, or simply felt overwhelmed by the amount of work, and the number and quality of decisions to be made in the process. One student described the elusive thesis topic metaphorically as "a huge black spot in my brain".

> *I've tried to find a topic for three months now. I just can't find anything or then if the company has something I don't know if it's interesting enough or if I could even really do it. The topic is just a huge black spot in my brain! Can we talk soon?* (email)
>
> *So many others have a topic already and I have nothing. I've gotta find something soon. Tell me what I should do.* (classroom)
>
> *I don't know which way to go. I'm going crazy here.* (classroom)
>
> *I'm so desperate at being stuck with the thesis topic plan, please can you help me.* (classroom)
>
> *I'm lost with the topic and the plan - I have no clue. Can you help me.* (email)
>
> *I'm just not qualified to do all this. I can't take this kind of responsibility or promise anything to a company, when I basically don't know anything. I'm just a student.* (classroom)

3.2.4 Getting done

The interaction of the three *internal mental processes* described above –*wanting, thinking* and *feeling* – generate the *internal mental experience,* which, in turn, result in the category of *getting* the thesis plan *done* or not, and vice versa, through continuous complex loops of interdependencies. The *getting done* category contained five properties, and the connected category of *future doing*.

When discussing *getting done*, students frequently used the expressions "getting anything done" or "getting something done". Thus, the *amount* of doing became the first property of the *getting done* category. A student got done with the thesis related tasks and the thesis plan itself on a scale of not at all to completely.

Getting done required engaging in a variety of tasks. This became the second property of the *getting done* category varying on a nominal scale containing a list of tasks. The list of tasks included finding the topic, selling one's skills to and negotiating with potential commissioning organizations, seeking faculty advise, giving and receiving feedback from peers, formulating the research question and investigative questions, or project objective and project tasks, deciding on the demarkation or scope, drafting the idea for the theoretical framework, finding and reading relevant literature, choosing the research or project management methods, and knowing how to report academically in accordance with the institutional standard. The outcome of all the doing was the thesis plan itself and getting done with the thesis planning course.

> *I'm just not getting done with these things for the plan. There's a lot of decisions to make and I'd like to meet you again to sort things out a bit more. I'm sorry I'm such a pain in the ass asking you about everything all the time, but I just don't feel comfortable making these decisions alone. (email)*
>
> *[an individual consultancy session was held on the day following the email. A week later the same student emailed again as follows.]*
>
> *I'm the student who figured out a really interesting topic about […] last week if you remember. Thanks for talking it over with me! It helped get over the confusion and now I've gotten the plan almost done because of it. Yea me! But, I need to ask still one more question about […]. Thanks for your patience in advance. (email)*

The majority of students got done during the planning workshop, at times a little behind schedule. From this temporal aspect emerged the third property of the *getting done* category: speed varying along the dimension slow–fast. A small minority of students did not *get done* either at all or at a passing level. Among these were students who needed additional individual advising to complete the course, and those who had skipped so many sessions that retaking the course – in some cases unwillingly – was necessary to develop the requisite competences. Some students inched onwards painstakingly slowly, while others completed their plans by deadlines given. It was rare for a student to complete the thesis plan before the final deadline.

> *I've been so slow, but now that I got the topic I've been kind of flying with it. I'd like to ask for your comments on the draft attached.* (email)

Students often spoke of *getting done* with the thesis plan and the thesis by relating them to some *future doing* in the domains of studies, career or, more generally, life. Some specifically verbalized their intention not to link the thesis process to any *future doing*. This discovery required the creation of a new category, *future doing*, linked to the *getting done* category. Students used the thesis process at different *levels of instrumentality* on a scale from no/low to high, and for different *purposes of instrumentality* varying on a nominal scale of domains where the thesis could be useful, with more specific targets in each domain. Interestingly, the category of *getting done* contained two properties on a nominal scale, while all other dimensions in the substantive grounded theory were on an interval scale. Examples of these last two properties are among the quotations presented earlier in this chapter.

This concludes the examination of the students' internal mental processes and the *getting done* that results from them, and vice versa. Next we examine the social context where the internal processes take place.

3.3 Part 2: Social experience from social interaction processes

In GT "a concept is the naming of a social pattern grounded in research" (Glaser 2001, 10). This chapter focuses on the second core category, *social experience*. It emerges when *internal mental experience* and *getting done* interact with the *social processes of interaction, communication* and *collaboration* in which bachelor's students enter while putting the UAS bachelor thesis plan together. The data quotations below reveal the complex embeddedness of the individual *internal mental experience* and the individual *getting done* in the individual's *social experience*, and vice versa. While the previous chapter expounded on the student's *internal mental experience* focusing on what he *wanted, thought* and *felt* for and about himself and various inanimate objects of thinking, this chapter widens the perspective to the student's perceptions of, interactions with and reactions to other thesis process stakeholders. Here the *wanting, thinking, feeling* and *getting done* reaches beyond the self to other living entities: faculty, peers and working life representatives.

The analysis revealed five categories of *social processes* illustrated by the *social experience* diamond containing *the interaction, communication and collaboration processes* and the stakeholders the student engages during thesis planning (figure 7). These either supported or hindered the goal of *getting* the thesis plan *done*. This chapter leads with the interaction processes between the student and *working life representatives* (chapter 3.3.1). Next, attention is turned to the interactions between the student and *faculty representatives* (chapter 3.3.2). Following this, the third category, *interaction between faculty and working* life is presented. This category had less

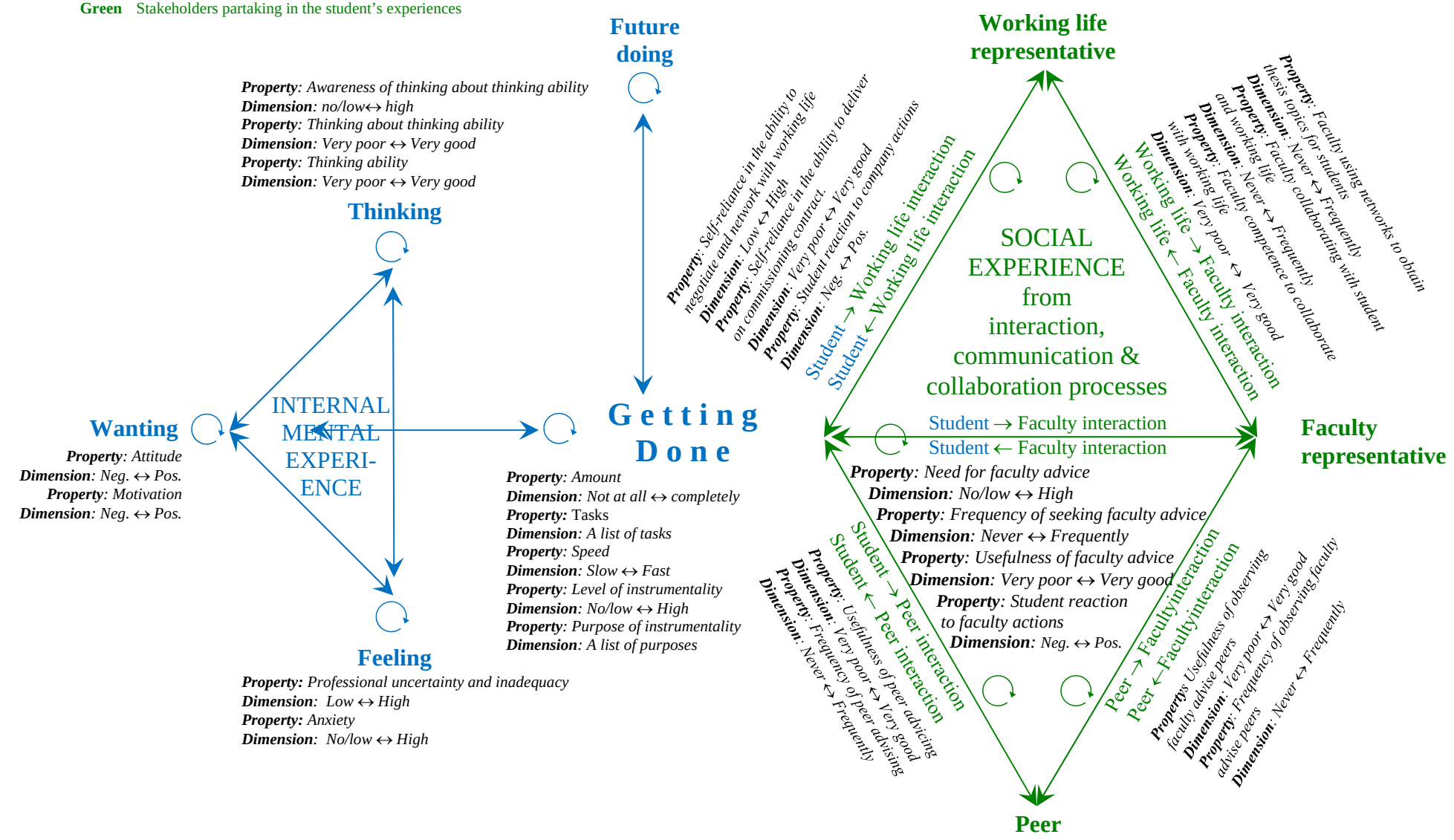

FIGURE 7. Beginning the dissertation journey. A substantive grounded theory of undergraduate business students' experiences of the thesis planning stage in a Finnish UAS. The core category is *getting done.* The two main secondary categories are *internal mental experience* and *social experience*.

data supporting it than any of the other categories, but it clearly existed. Thereafter the spotlight is turned on students' experiences of *interaction with peers* and the *observed interaction of peers with faculty* (chapter 3.3.4). Overall, the demands of these categories indicate that students need to possess good social competences to engage in RDI successfully.

It should be noted that each interaction category may rely on the support provided by the the other interaction categories. The interaction processes are here discussed in separate chapters for purposes of clarity only. The discussion and quotations illustrating students' experience aim to continuously hold up to the reader their intertwined nature. Additionally, the interdependencies of the five interaction categories are illustrated through a student story with several communicative feedback loops (chapter 3.3.5). Lastly, the overal dynamic of the emerging substantive grounded theory are explored, and tentative hypotheses presented (chapter 3.3.6).

3.3.1 Interaction, communication and collaboration between the student and working life

The analysis revealed three properties to the *student–working life interaction* category. The first two were: *self-reliance in the ability to negotiate and network with working life*, and *self-reliance in the ability to deliver on commissioning contract.* The former varied on the dimension low–high, the latter on the dimension very poor–very good. Additionally students had *reactions to company actions* varying on the dimension negative–positive. We will start with the first of these.

The great majority of students contacted faculty either before or during the early stages of the thesis planning process to request advice for and coaching on how to seek, contact and negotiate with working life organizations. These requests indicated that students experienced varying levels of *self-reliance in the ability negotiate and network with working life* on the dimension low–high. The requests varied in number and complexity depending on the students' *internal mental processes*, ability *to get done*, and their prior experience of similar situations. Student's verbalizations indicated the need for encouragement, moral support, and practical help in contacting companies. Students' questions covered topics, such as, types of case organizations accepted, finding organizations to contact, ways to contact organizations, contents of a good introductory letter or speech, introducing oneself as a thesis student, proposing and/or requesting a thesis topic or topics, finding out what organizations need, and methods to convince organizations of the benefits of accepting a thesis student or a specific thesis topic. Below examples of questions from students with rather low self-reliance in the ability to negotiate and network with working life.

> *I don't know where to start contacting companies. What company should I contact first? How do I know if companies even need something like a thesis?* (class)
>
> *I don't know how to negotiate about something like this with companies! I've never had to do it in any of the courses … so how am I supposed to do it on my own now?* (classroom)
>
> *How should I approach the company? Do I call or email or visit them first? What if I call at a bad time or they don't answer my email at all?* (classroom)
>
> *What should I say or write to them or when I first contact them?* (classroom)
>
> *I'm not quite sure that my introductory letter to the companies is a good one. I've attached it here, and would be very grateful if you could give me feedback on how to improve it. Then I'd feel more confident about sending it. Thanks in advance!* (email)
>
> *I cannot know what the company needs. What if I suggest something completely irrelevant for them?* (classroom)
>
> *What if the company is not interested in the topic? How can I convince them? I mean I may know that they could really benefit from it, but maybe they don't see it.* (classroom)

A small number of students had good to very high level of *self-reliance in their competence to negotiate and network with working life*, including interviewing and even consulting with case organization's management representatives to find out what their RDI needs were. These students made proactive use of their existing private and professional networks, and prepared carefully for the first and subsequent meetings by utilizing faculty advice purposefully and effectively. They also weighed carefully the benefits that a specific topic or case organization could deliver to them in the form of learning, CV contents, new networks and career opportunities.

> *I'm hoping for some advising in contacting the organization that I'm hoping to co-operate with during my thesis process. The problem is that I don't yet know the topic which I want to research, but I am very interested in researching [company name]. Especially I would like to research it in the United States or in Mexico and do my field research period there. Is it even possible? I did my exchange period in Mexico and I have a friend who knows the founder the company in [city]. She asked me to send a letter to her so she could introduce the idea to the founder.*
>
> *So my question is, what would be the best way to bring out that I am interested in co-operating with the organization even though I don't know my topic or research field (other than my specialization)?* (email)
>
> *I'd like to do my thesis for the volunteer organization [organization's name] that I've been working for for a long time. Is that possible or does it have to be a for-profit business? I know their every day reality pretty well from experience by now,*

> *and I have some topic ideas that could help develop their processes. [A well-prepared listing of topics indicating how each would benefit the organization]. If you could give direction on which of these topics might make a good thesis topic, I could then take those up and try to refine them in my meeting with the organization. Like we've discussed before I'm hoping to eventually have career in the humanitarian side of NGOs and this would be a step that way. I really want this!* (email)

Once students had contacted a few organizations, or the negotiations with a commissioning organisation were underway, the focus of the questions students presented to the faculty changed. The questions pertained to: strategies to continue the negotiations; the suitability of the scope of a proposed topic; strategies for demarkation when the proposed topic appeared too small or too wide in scope; choosing between topics with a wide scope with little depth and narrow scope with much depth; the adequacy of the international aspect of the topic, or, if it was missing, incorporating it somehow into the topic; dealing with confidentiality requests; finding concepts, theories and models to design the theoretical framework to match a challenging or less studied topic requested by an organization; and the research and project management methods needed to get the answers the company was asking for. It should be noted that the international aspect to the thesis topic was a curricular requirement in the degree program studied. It tended to cause a lot of worry to quite a few students with topics from Finnish SMEs without international operations.

> *I have contacted a company about possibly writing a thesis for them. They replied their conditions about the thesis and i would like to go them through with someone. Would you be free for a meeting with me next week 13.8-17.8?* (email)

> *I just contacted [company name] about my thesis. The lady is interested in my topic and asked me to send an e-mail and wishes to meet for further discussion. Should I still be contacting other companies before I meet with this company? What if I would be in the situation that I have two companies interested and should meet both of them? When do I know when to drop other companies? How can I suddenly say to a company "sorry, no can do after all"? I would feel really bad to ask another company now that I have one potential one ☹I'm meeting [company name] on Thursday. Would you have a short moment on Tuesday to meet me so that we could go through the things that I should remember to mention in the meeting, etc?* (email)

> *I sent an email to the company and recieved back a list of Finnish companies and the equipment that they are currently using. From this list I narrowed my enquiries down to 7. I am composing an email to send to the contacts provided and would like some feedback on it. Below is the first draft. [a well articulated and composed message draft]* (email)

> *I'm concerned about not having an international aspect to my topic. And the company does not want the products and the sales figures revealed. They basically now want a completely confidential thesis because they don't want it*

> *published at all. I didn't dare to tell them that it has to be published at least somehow. Can I come and talk about how to explain this confidentiality thing to them?* (email)

Companies that were eager to take on students to do small RDI projects or parts of a larger one might offer too large a topic either initially or later on during the negotiations. This led students to discuss with faculty how to demarkate an oversized topic, and how to broach with the organization the fact that the student would/could/should not engage in an overly large thesis project because of the extra academic work and reporting involved without any added value in terms of study credits. Many were willing or eager to first complete a suitably sized thesis, and thereafter offer their services as paid employees to complete the aspects or activities that did not fit in the scope of the thesis.

> *I told you last week that I got the topic with [company name]. I met them again yesterday and now they want me to include also a customer survey in addition to the employee interview study I've already promised to do for them. Customers are not related to the original topic in anyway and I'm a human resource student (not marketing). I'm happy to do the original topic for them for free but I don't want to do a lot of extra work for nothing – stuff I don't need for thesis. They should pay me for the extra. We should meet so that I know what to say to the company. I don't want to lose them, but I don't want to do extra either. I need your advices.* (email)

> *The comp wants me to do market survey, and look for potential customers and then look at how to internationalize to [country name]. I think it's way too big. And im not even sure I would be able to do all that. Can you meet me Monday afternoon?* (email)

In addition to the thesis related concerns, studens also enquired about more practical issues. These included: when and how to introduce the commissioning agreement with the contractual details to the organization; whether to ask for financial compensation and how much, or whether to do the thesis for free; what to do when there is an oral or written thesis commissioning contract with one company and another much more interesting one emerges; and whether to ask for or consent to a work placement opportunity from the thesis commissioning organization, or vice versa.

The second property of the *student–working life interaction* category was *the self-reliance to deliver on the commissioning contract* varying on the dimension very poor–very good. Some students were quite concerned: firstly, about their overall competence to deliver on an agreed thesis project successfully, and/or secondly, about being able to handle the timeline challenges and high workload involved in writing a thesis. A few students were challenged by a simultaneous thesis project and work placement period either for the same organization or two different organizations. There were also students who had high self-reliance in their ability to deliver in

spite of time restraints, high workload and/or high competence expectations on the side of the company.

> *Yesterday I received the unfortunate news that I wont be able to write the thesis in [company name] where I am doing my internship. The woman on the phone was so nice and tried to help me find a solution. She even suggested to cancel the internship and instead meet next year to discuss a full-time employment after graduation. It would be insane to not take the opportunity of the internship to find out whether the workplace and the town there are my thing - since they are actually hiring there, alot. However, delaying my graduation is no option either. That's just not how I do things and that's not what I signed up for. Furthermore I cannot risk my health with [name of illness] and jump between two companies cutting away all the resting time which I will need in a totally new environment.* [email]

> *Good news! I hit the jackpot! The company we talked about is offering me an internship AND a super challenging thesis topic! They'll pay for the internship but the thesis I have to do on my own time without pay. I've got no problem with this. It's what I do anyways, I mean work and study at the same time. I can't wait for June! I'll have quite a massive challenge ahead! Thanks for encouraging me to contact them!* (email)

Another practical concern related to whether the topic agreed with a commissioning organization had the potential for a high grade.

> *Can I get at least a 3 for this? Or is it too common?* (classroom)

> *Will the company research be significant enough to get the grade 5? I want to continue to a master's program and want a high GPA.* (classroom)

The third property of the *student–working life interaction* category contains *the students' reactions* to company actions – what the company did or did not do – in response to student contacts. These reactions varied on the dimension negative–positive. Negative reactions emerged when companies failed to respond at all, took a long time to respond and make decisions, or responded negatively. Students were also frustrated when an organization, in their opinion, had obvious development needs that the organization itself failed to perceive, or when SME owners with vocational or comprehensive school education failed to understand how new theories, models and improved business processes would benefit them. Reasons quoted by companies in their negative responses included not having a need or time for a student project, lacking prior experience in working with thesis students, not having extra staff to advise and guide the student, and possible thesis topics involving too much confidential information that could not be publicly published. Some potential commissioning organizations' topic offers were so wide and demanding that they were beyond the scope of a bachelor thesis. In these cases, students needed help

demarkating the topic to size it suitably. At times students had tried to demarkate the topic in the company meeting without success, ”because the company obviously wants it all for free without committing themselves to anything” (individual consultancy). Companies’ responses could exert a powerful negative influence on attitudes and motivation and feelings as the following quotations illustrate. These verbalizations reverberate with feelings of being fed-up, discouraged, unappreciated or abused.

> *I’ve written to 16 companies but nobody even answers. I’m gonna give up. It’s too difficult to find a company so I want to do a desktop thesis. That’s the only option I can come up with right now that would not totally freak me out. This is crap because I wanted to work on a real problem not just on something academic and booksy. […]* (email)
>
> *The company said that I must give them a ready topic, but I don't have one. And how am I supposed to now what to even offer! I can’t say I’m motivated to do anything now.* (individual consultancy)
>
> *[…] She [company representative] said that they will maybe use them [thesis results] to some degree but they need to see the results first. Am I supposed to get excited by that? […]*(email)
>
> *[…] They want me to do the research and then the project. I don't want to work for free for hundreds of hours! I’m no slave labour. […]*(email)
>
> *My current boss said that he could “let me do” the thesis for them although they don’t need it. And they probably won't use or need the results anyways. It's sooooo frustrating to do the research if they don't want to even look at what I'm going to write. I’m not sure I want to stay there much longer and at that point doing the thesis for them would just collapse – they wouldn’t give me any info anymore to complete it. I have a really bad feeling about this and I need to talk to you about what to do next.* (email)

The positive impact could be just as powerful as the negative one as exemplified by the earlier quotation of the student receiving both the thesis topic and the work placement from the same company. The good will and motivation organizations generated in students by aiming to work toward the possibility of offering both thesis and work placement was notable.

> *I got the summer job! I am now trying to make that same company give me a topic also. They said, they are trying but they cannot promise anything … yet. I will have to contact alternative companies also then, okay! But there’s a possibility …[…]*(email)
>
> *[…] If you remember our meeting, I’m planning to do my thesis of customer buying behavior, but I do not have the precise topic in my mind yet. I have discussed about this with [company name], marketing and communications director [person’s name]. He said that sounds something they would most likely*

> *be interested in. He asked me to develop my idea a bit more and return back to him, and we would take a look at it again. He said that if that's not exactly for them, he suggested I could do my thesis for some of their customers, for example to [company names]. However, he ended the discussion that "surely we will find you something". He set one condition though: if I'm doing the thesis for them, it has to be done _quickly_, otherwise there is no benefit for them if it takes few months. We did not agree what is the timeframe, but I'm guessing that the thesis should be completed in 1-2 months tops. I will raise this topic again with him when I'm meeting him next time, once I have developed my idea/topic a bit further.* (email)

3.3.2 Interaction, communication and collaboration between the student and faculty

The previous chapter focused on the *student–working life interaction* category. It is obvious, however, that the discussion and the quotations relied quite heavily on the the *student–faculty interaction* category. The latter with its four properties is the focus of this chapter. At the end of this chapter the intertwined and recurring nature of these two interaction categories is exemplified through a student case.

Student perceptions of *the need for faculty advice* ranged on the dimension no/low–high. There were students who felt they did not need advice. Mostly these students advanced very slowly in their thesis planning, or dropped out from the workshop. Some of these students eventually understood that they needed assistance to help resolve their confusion. At the other end of the dimension, there were students who needed to be advised on even the smallest details. They felt – either incorrectly or correctly – incapable of making decisions on their own, and often experienced a high level of uncertainty. Some students in this group sought advice, not because of inability, but because they were intellectually lazy and did not want to do the thinking required. In between, there was a self-directed group of talented students, who resolved most of the questions themselves, and sought advice only for questions too complex or otherwise difficult to solve on one's own. At times these students emailed faculty a status report detailing what they had alredy done and what was to be done next.

The second property of the student–faculty interaction category was the *frequency of seeking faculty advice* varying on the dimension never–frequently. This property is tightly linked with the first property above. Firstly, students with high *need for faculty advice* tended to seek for advice frequently. Secondly, students who did not perceive the *need for faculty advice* tended never to seek for advice. These students commonly failed to advance in their thesis planning. Thirdly, self-directed and talented students sought for advice every now and then to resolve some more complex and challenging problems, to discuss their decision-making premises in more detail, or to keep the faculty up to date of their progress.

> *I'm sorry to be knocking on your door again. I know I'm such a pain in the ass, but I really need help to formulate these investigative questions. I don't have a clue how to do it.* (individual consultancy)

> *I'm contacting you to ask for a meeting to discuss the demarkation of my research question in more detail. I've used geographic demarkation criteria (Nordic countries), stakeholder criteria (B2B customers), and temporal criteria (last three years). I'm now trying to demarkate using the logic of my specialization and need help between three options that I've identified. Can we meet this week?* (email)

The third property, students' perceptions of the *usefulness of faculty advice*, varied on the dimension very poor–very good. Students' experience depended on whether faculty was available and committed to meet in a timely manner when assistance was needed; replied to specific questions or helped the student to realize what areas to focus on in the problem resolution process; were willing and able to discuss matters in depth; gave pointers for suitable theories and reading materials; viewed student RDI positively as meaningful; gave encouragement; and showed faith in the student's ability to succeed. Below some examples of usefulness verbalizations ranging from very poor to very good.

> *[…] At some point, I felt that I cannot go further in my thesis. I had then to consult my teachers and to read more about the subject. I asked my specialization mentor to help me decide on the topic and the demarkation, but he just said go to the library and read. That was pretty useless because I had already read and even talked to my student mates trying to figure it out. Then I contacted you and we sat down and drew figures on the paper until it was clear to me. […]* (story)

> *I met with my mentor like you told me to and she was really helpful. She suggested concepts that would be useful in the theory framework and that helped me to formulate the project objective much better. Plus she sounded quite interested in my topic too! Now it would be really useful if I could check with you about the demarkation because my mentor was not quite sure about the topic size and suggested talking with you because you helped me before with […]*(email)

The fourth property of the *student–faculty interaction* category, *student reaction to faculty actions*, varied on the dimension negative–positive. It mirrored the corresponding property in the *student–working life* category. Students were disappointed, frustrated, discouraged, upset and/or angry when faculty did not offer useful and timely advice and encouragement, and delighted, encouraged and thankful when faculty did.

> *I tried to talk with a substance teacher, but he did not have any time for me. He didn't even have time to set up a meeting for later on. And my mentor is not answering my emails. I'm so frustrated with all this. Anyways, now I'd like to come talk to you again, because you've encouraged me this far and helped me*

> *keep going with all the stuff that has been going on in my life and the thesis.* (email)

> *Thank you so much for the advice you gave for the negotiations with the company. They answered to the cover email you checked the same day! I met with them on Monday and they said I seemed to know what I was talking about. Yesss! Could you meet me briefly to discuss […]. And thank you in advance again!* (email)

3.3.3 Interaction, communication and collaboration between faculty and working life

The next category in the emerging grounded theory is the *faculty–working life interaction* category, which evidenced itself rather rarely in the data. Two properties emerged. Firstly, some faculty members utilized their working life connections to arrange thesis topics for students. The property to describe this was titled *faculty using networks obtain thesis topics for students*. It varied along the dimension never–frequently.

> *I would like to thank you for meeting me the other day to discuss my thesis situation. I am glad that I met you as you gave me very good advice and motivated me. Like you suggested I spoke to [teacher's name] about my situation and my interest in branding etc. She is very willing to help me and is certain that she will find a company for me. Today she got a promising reply from [company name] so lets hope for the best.*

> *Thank you for your help, patience and flexibility.* (email)

Secondly, some faculty used either working hours or their personal time to meet the case organization together with the student either on UAS premises or the organization's premises. This property was named *collaborating with student and working life*, and it varied along the dimension never–frequently.

> *Good news! I have a topic now. I contacted [company name] and they asked if I could meet them with my teacher. My mentor said it was ok and we all met on Thursday evening after school at the company to discuss what they might need from me that I would also be able to do. We came up with the project objective […]. It was so good to have the teacher there with me cause some of it I couldn't have done on my own. I now have the commissioning agreement ready and would like your signature on it. I'd like to also talk about some of the project management methods with you. […]* (email)

Thirdly, there were a few verbalizations that indicated the property *faculty competence to collaborate with working life* varying along the dimension very poor–very good. Components of the competence included professional knowledge, negotiation and discussion skills, and competence in a foreign language.

> *I think [teacher's name] is really good at what he does but his English is not the best and since the company language is English – they don't speak any Finnish – I don't think it's a good idea to ask him to go there with me.* (individual consultancy*)*

> *I would need a [specialization name] teacher to go with me to the company. I'd want to get [teacher's name] to go with me because he is so knowledgeable about the topic and really good at discussing things.What do you think, could I ask him or is that asking too much?* (individual consultancy)

3.3.4 Interaction, communication and collaboration students as peers and peers with faculty

The two last interaction categories relate students to peers and tell about the dynamics of learning with and from peers. Both of them had a special before–after dynamic that set them apart from the other categories. This is illustrated well in the *student–peer interaction* category. Before the thesis planning workshop students commonly failed to appreciate the quality of peer advice.

> *Why should I talk to my friends about the thesis and what good does it do to go through assignments with them? They don't know any more about theses than I do. Blind leading the blind and just a massive waste of time.* (classroom)

The property *usefulness of peer advicing* emerged from these types of comments. It varied on the continuum very poor–very good. These negative beliefs often changed during the workshop as students started to receive noteworthy comments and insightful questions from their peers. Especially more competent and ambitious students committed to the thesis planning process grew to appreciate the assistance of peers, and the value of the assistance they, in turn, could give to their peers. When students understood the benefits of peer advising, the frequency of peer advising increased. From this emerged the property *frequency of peer advising* that varied on the dimension never–requently.

> *I've now talked with my mates quite a few times and have gotten the research question and investigative questions to where I think they are really good. The problem I have now is figuring out the demarkation in more detail. I was thinking I could include in the research […]. But my mates say that it's too much. What do you think?* (email)

> *I team insists that this topic is unresearchable. What do you think?* (classroom)

The properties of the second category, *peer–faculty interaction*, mirror the properties and the before–after dynamic of the *student–peer interaction* category. Students' verbalizations indicated the category *usefulness of watching faculty advice peers* ranging on the dimension very poor–very

good. As students started to learn from listening to faculty advising peers, or noticed that faculty advice actually benefited peers, student comments commonly grew more positive. This was reflected in the second property of the *peer–faculty interaction* category, the *frequency of observing faculty advise peers,* which ranged along the dimension never–frequently.The better students perceived the *usefulness of watching faculty advice peers,* the more frequently they utilized it.

> *Can I go already? There's no point me watching you debrief there on the whiteboard the demarkation of an accounting student when I'm a marketing student. I won't get anything from it.* (classroom)

> *You did that methods thingy on the whiteboard for [student's name] and it looked really interesting and cleared up a lot of questions I had. I think I got the point, but could you do it for me too just in case?* (classroom)

It seemed that less motivated students and students who did not wish to invest much in thesis planning did not perceive the benefits of learning from peers or from the peer–faculty interaction. Students with high motivation levels and high *thinking about thinking skiulls* and *thinking skills,* in turn reflected on what was shown to peers and applied the advice to their own thesis problems.

Now that all the categories and their properties have been presented, we will move on to explore in more detail some of the dynamics evident in the substantive grounded theory to better perceive "the things that are going on".

3.3.5 Interaction loops

The above presentation of the structural components and the dynamics of the substantive theory reveal a multitude of interdependences between categories and the properties of categories. There are interactions and recurring interactional loops. Figure 8 illustrates a chain of communication events that built on each other while the student was engaged in trying to resolve the problem of *getting done* with the thesis plan. The text in the figure is a direct quotation from a student's story. The number indicates the order of the communicative events, and the location of the text the stakeholder with whom the student is communicating. This case example illustrates well the variety of stakeholders with whom the student processed his problem of *getting the thesis plan done*: faculty specialization mentor and thesis coordinator, case organization and peers. The number of recurring communicative loops is quite high, that is, the student's path to the solution is a long and complex one.

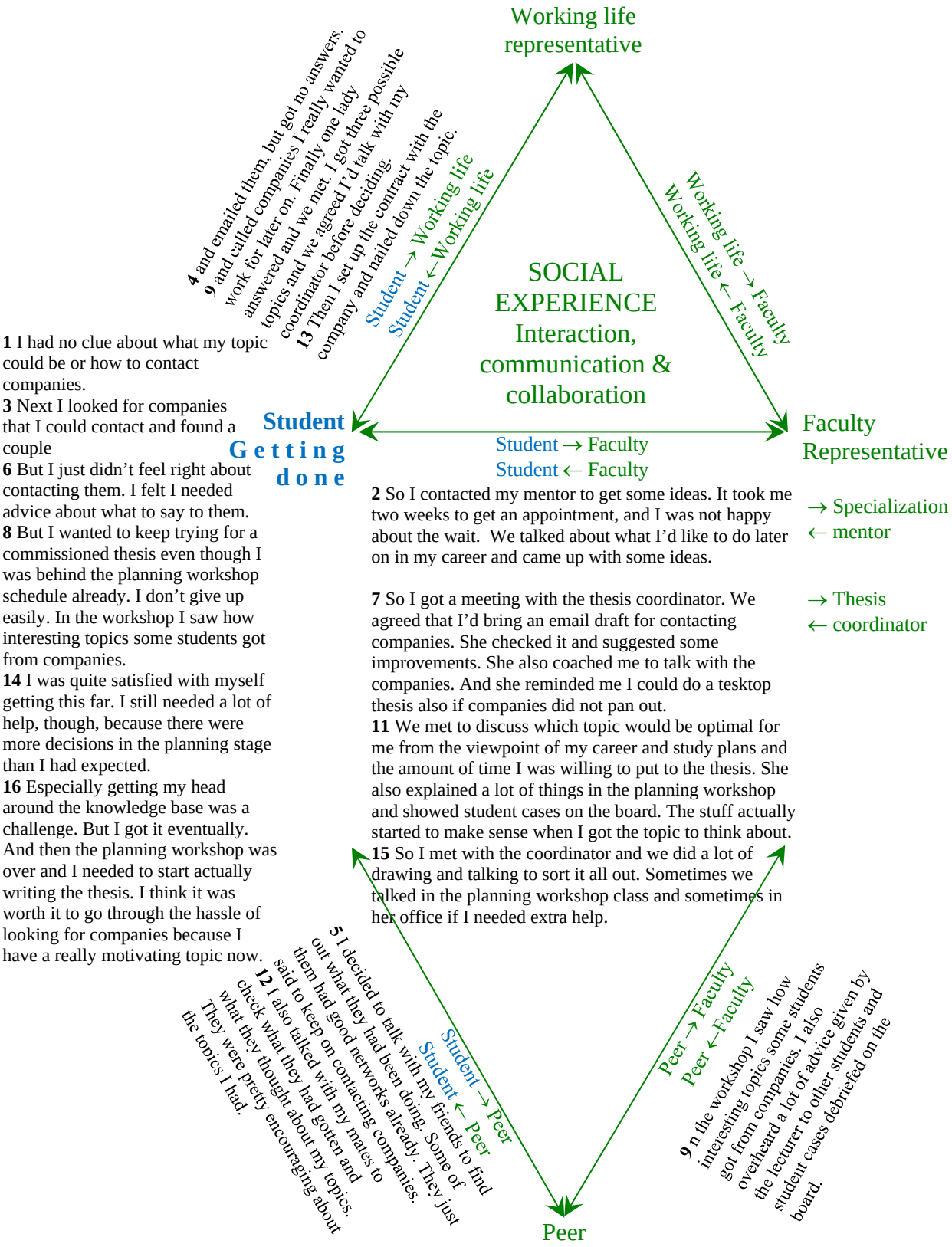

FIGURE 8. Interactional loops consisting of bilateral and trilateral interaction. A case example the student's path to solution – a chain of communicative events building on each other whilst the student attempts to resolve the problem of *getting done* with the thesis plan. The figure is read by following numerical sequence. Text location indicates interaction category.

Reading the example, it becomes evident that the student has a good level of research self-efficacy. He is purposefully building the topic and seeking answers to his questions. However, the data revealed a discouraging number of students who were lacking in their level of self-efficacy, and therefore failed to engage in this kind of driven behavior in search of the thesis topic.

The danger in this kind of a communication chain or student path to solution is that negative feedback, lack of timely, competent and committed advising can disrupt it, leaving the student stuck in the thesis process due to a missing topic, lack of external encouragement, lack of internal motivation, and lack of self-reliance in one's own ability. In each course implementation, there were students who dropped the course for varying reasons, including, not having enough time to work on the thesis due to studies and work, not having any ideas about what the thesis could be about, feeling intimidated by clever peers, feeling discouraged by faculty, and/or not having self-reliance in the professional ability to handle the challenges at that point in their studies.

A more detailed analysis reveals the types of relationships present (figure 9). There are bilateral relationships and trilateral relationships, out of which the student's *social experience* arises. Bilateral relationships include *student–working life interaction, student–faculty interaction, student–peer interaction* and *peer–faculty interaction.* Trilateral relationships include the triads *student–working life–faculty interaction* and *student–peer–faculty interaction.* Theoretically a quadrilateral interaction relationship between all the stakeholders exists, but none emerged in the analysis of the data. No existing models suggest such a relationship either, although from the viewpoint of socioconstructivist learning it has much potential. Considering the variety and demands of these social engagements, it is obvious that the student needs good social competences to complete thesis planning both meaningfully and successfully.

3.3.6 Student case types and hypotheses on the dynamics of the early dissertation journey

A sociological grounded theory is required to fulfill many functions. It needs to facilitate prediction and explanation of behavior, advance sociology theoretically, provide tools for practical application, and offer categories and hypotheses for verification (Glaser & Strauss 1967, 3).

In this study, such a large number of verbalizations was analyzed, and so many individual student cases observed that the underpinning dynamics or process of the substantive grounded theory started to emerge also as *student case types* (figure 10). There were some students at the extremes of *student case types* dimension with the majority placing somewhere in between. *The challenged students* at the negative end of the dimension typically experienced many difficulties with *getting done*, and advanced slowly in the thesis process. *The competent students* at the

positive end of the dimension experienced few to no difficulties, and often also advanced more speedily in the thesis process. For details on the categories, and properties and their dimensional values of these two extreme *student case types*, refer to figure 10. The more average students placing in between the extremes were *students with varying competences and challenges.*

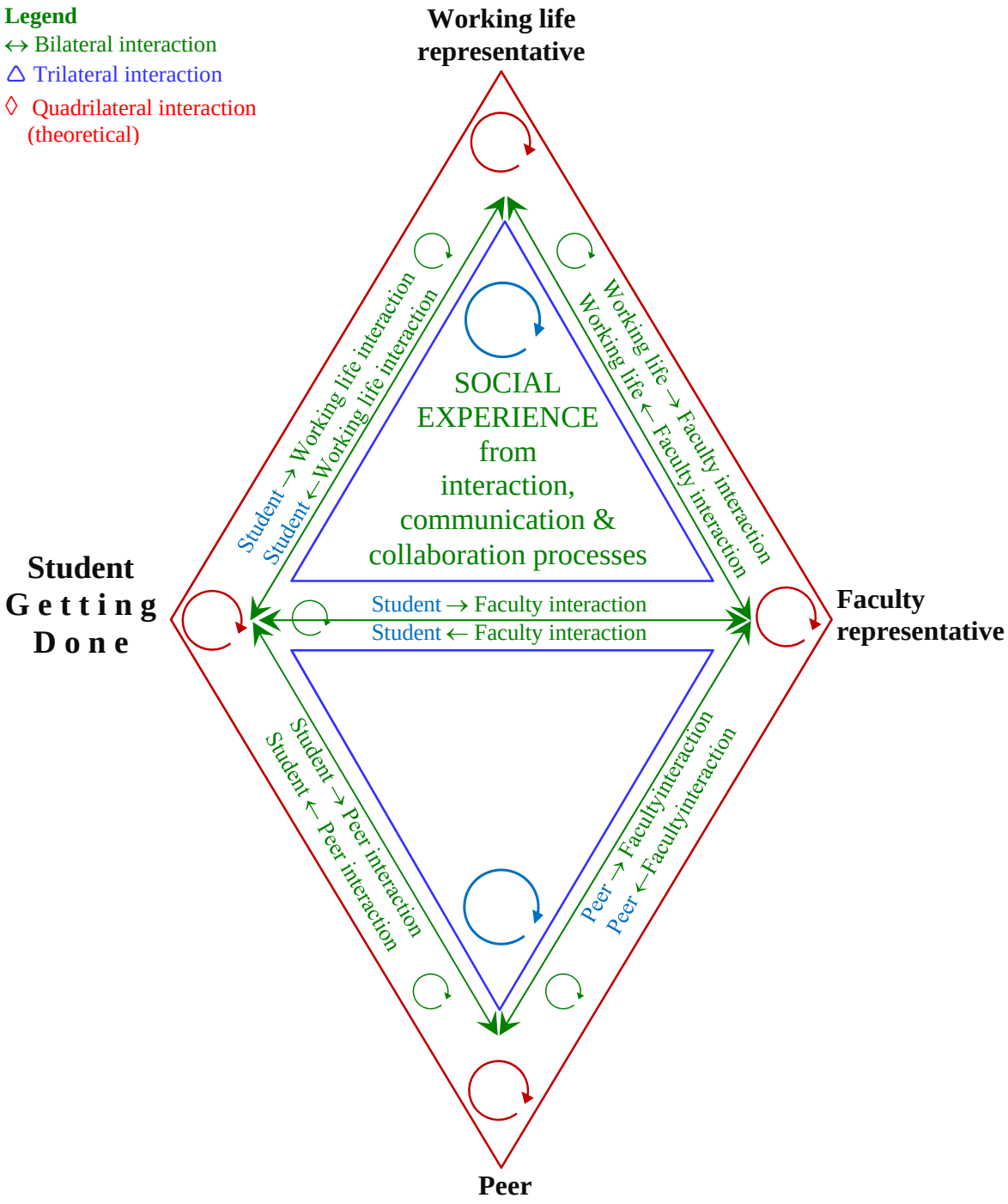

FIGURE 9. Bilateral, trilateral and quadrilateral interactions.

Challenged students
experiencing many difficulties, and advancing slowly in thesis process

Students with varying competences and challenges

Competent students
experiencing little to now difficulties, and advancing speedily in thesis process

STUDENT TYPE DIMENSION

Internal mental experience
- Negative attitudes and motivation
- Very poor thinking about thinking ability
- Very poor thinking abity
- Low level of professional certainty and adequacy
- High level of anxiety

Getting done
- Low level of *getting done*
- Low level of instrumentality
- No clear purposes for instrumentality

Student–working life interaction
- Low level of self-reliance in the ability to negotiate and network with working life
- Low level of self-reliance in the ability to deliver on the commissioining contract
- Negative reaction to company actions

Student–peer interaction
- Perception of the usefulness of peer advising very poor
- Frequency of peer advising never

Peer–faculty interaction
- Perception of the usefulness of observing faculty advising peers very poor to very good
- Frequency of peer advising never or frequently.

Faculty–working life interaction
- Perception of faculty rarely using networks to obtain thesis topics for students
- Experience of faculty not collaborating with student and working life
- Perceiving Faculty competence to collaborate with working life very poorly.

Internal mental experience
- Positive attitudes and motivation
- Very good thinking about thinking ability
- Very good thinking abity
- High level of professional certainty and adequacy
- Low level of anxiety

Getting done
- Medium to high level of *getting done* irrespective of speed
- High level of instrumentality
- One or more clear purposes for instrumentality

Student–working life interaction
- High level of self-reliance in the ability to negotiate and network with working life
- High level of self-reliance in the ability to deliver on the commissioining contract
- Negative or positive reaction to company actions

Student–peer interaction
- Perception of the usefulness of peer advising very poor to very good
- Frequency of peer advising never or frequently

Peer–faculty interaction
- Perception of the usefulness of observing faculty advising peers very poor to very good
- Frequency of peer advising never or frequently.

Faculty–working life interaction
- Faculty using networks to obtain thesis topics for students never to frequently
- Faculty collaborating with student and working life never to frequently
- Faculty competence to collaborate with working life very poor to very good

FIGURE 10. Three *student case types* along the *student type dimension*.

The examination of these *student case types* facilitated the formulation of hypotheses on the dynamics of the substantive theory for later verification outside the scope of this study. The following grouped hypotheses relating the categories, their properties and the dimensional values of the properties to each other were set (figure 11).

- From the viewpoint of *internal mental experience*, the more positive and competent the student's internal processes, the more functional the *getting done* and the interaction in the *social experience* categories are, and the better the thesis plan progresses.
- From the viewpoint of *getting done*, the more the student gets done, the more functional the internal mental processes are, the better the student functions in the *social experience* categories, and the better the thesis plan progresses.
- From the viewpoint of *social experience*, the more successful and useful the social interactions, the more positive the internal mental processes, and the better the thesis plan progresses.

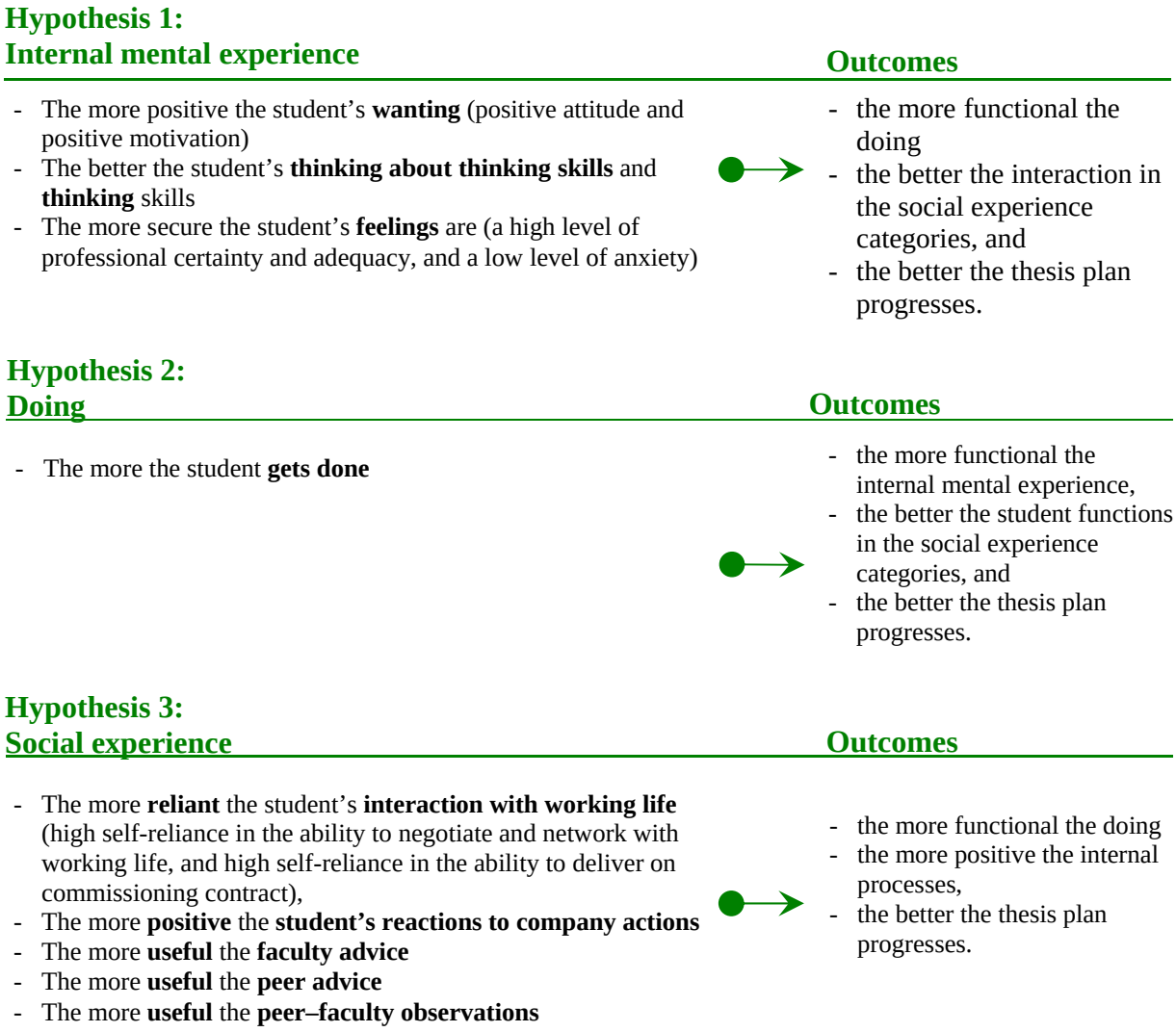

FIGURE 11. Grouped hypotheses on the dynamics of the substantive grounded theory explicating the student's experience in the thesis planning process early in the dissertation journey.

The hypotheses can be reversed to represent the negative cases by rewording them with "the less … the less". The dynamic of these hypotheses can be summarized starting at any point in the

figure as: the more positive and functional the student's internal mental experience, the better the social experience and the functioning of social categories, and the better the thesis process progresses (figure 12). These three core conditions and outcomes form a positive feedback loop in the early dissertation journey where the goal is getting the thesis plan done. The student's process can start with any of the three components. Similarly to the hypotheses above, the positive dynamic can be easily formulated in the form of a vicious negative cycle, the more negative and less functional the student's internal mental experience, the worse the social experience and the functioning of social categories, and the worse the thesis process lags. It is in this continous feedback loop where the pedagogic process can intervene to turn the negative experience into a positive one.

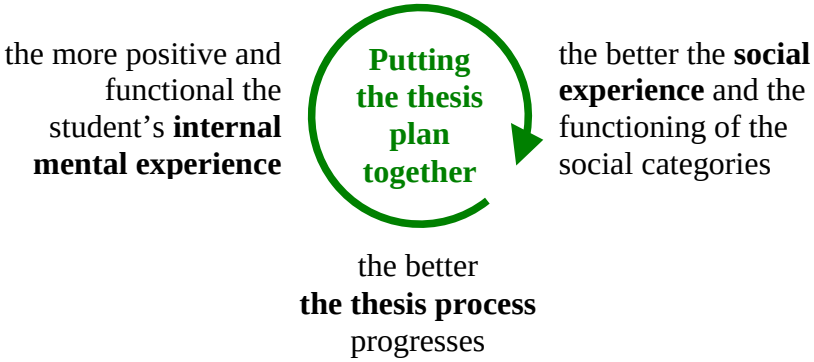

FIGURE 12. Core conditions and outcomes in a positive feedback loop in the early dissertation journey.

There were also students whose feedback loop got discrupted. A student could start with a very negative attitude and motivation, but become highly motivated upon receipt of a commissioned thesis offer from a company of "his dreams". Also, students with strong motivation and very good *thinking about thinking* and *thinking abilities* could lose motivation and emotional self-reliance after receiving repeated negative responses from working life organizations, peers and/or faculty. These examples of disrupted patterns highlight the need for competent and positive support throughout the process.

This concludes the presentation of the substantive grounded theory of student experience of the thesis planning stage. The next chapter explores the possibilities of raising the level of conceptualization, relates the findings to extant literature.

4 DISCUSSION

After the presentation of the substantive grounded theory that emerged from the data, it is time to relate the findings to existing theories and research findings in the field. First, the theory is related to other theories and models with the objective of raising its level of conceptualization. Thereafter, the theory is explored in the light of prior research pedagogic studies.

4.1 Scaling up the theory

In GT it is desirable to scale up, that is, raise the level of conceptualization of the emerging substantive theory. The goal is to relate it to other theories in the discipline. (Urquhart 2013, 129.) As previously mentioned, a GT researcher needs always remain vigilant not to force his data (Glaser 1992). To ensure this, only extant models that truly match the emergent theory were applied in the scaling up process. The resulting model contains the learner's *internal mental experience* triangle resulting in behavior, and vice versa, and the *social interaction diamond* that forms a quadripartite collaboration process in which the learner plays his part through his behavior.

Psychology approaches the human being as a psychosocial entity, whose behavior (doing) within a social context is a function of motivations (conation, wanting), cognitions (thinking) and emotions (affects, feeling) (e.g. Eriksson 1993; Rauhala 2005). Thus, the theory of the human mind assumes that the mind works relying on three functions: motivation, cognition and emotion. An additional human mental process in the psychological literature is thinking about one's thinking, that is, metacognition. In the grounded theory discovered, the subcategories in the *internal mental experience* category emerged from data as *in vivo codes*. Each of them can be scaled up without forcing the data using the above mentioned three mental functions of motivation, thinking and emotion from individual and educational psychology. Thus, *internal mental processes* can be conceptualized by translating *wanting* to motivation, *feeling* to emotion, and *thinking about thinking* to metacognition, and *thinking* to cognition. The *doing* translated as behavior is both the consequence of these internal processes and a factor influencing how mental processes function (figure 13).

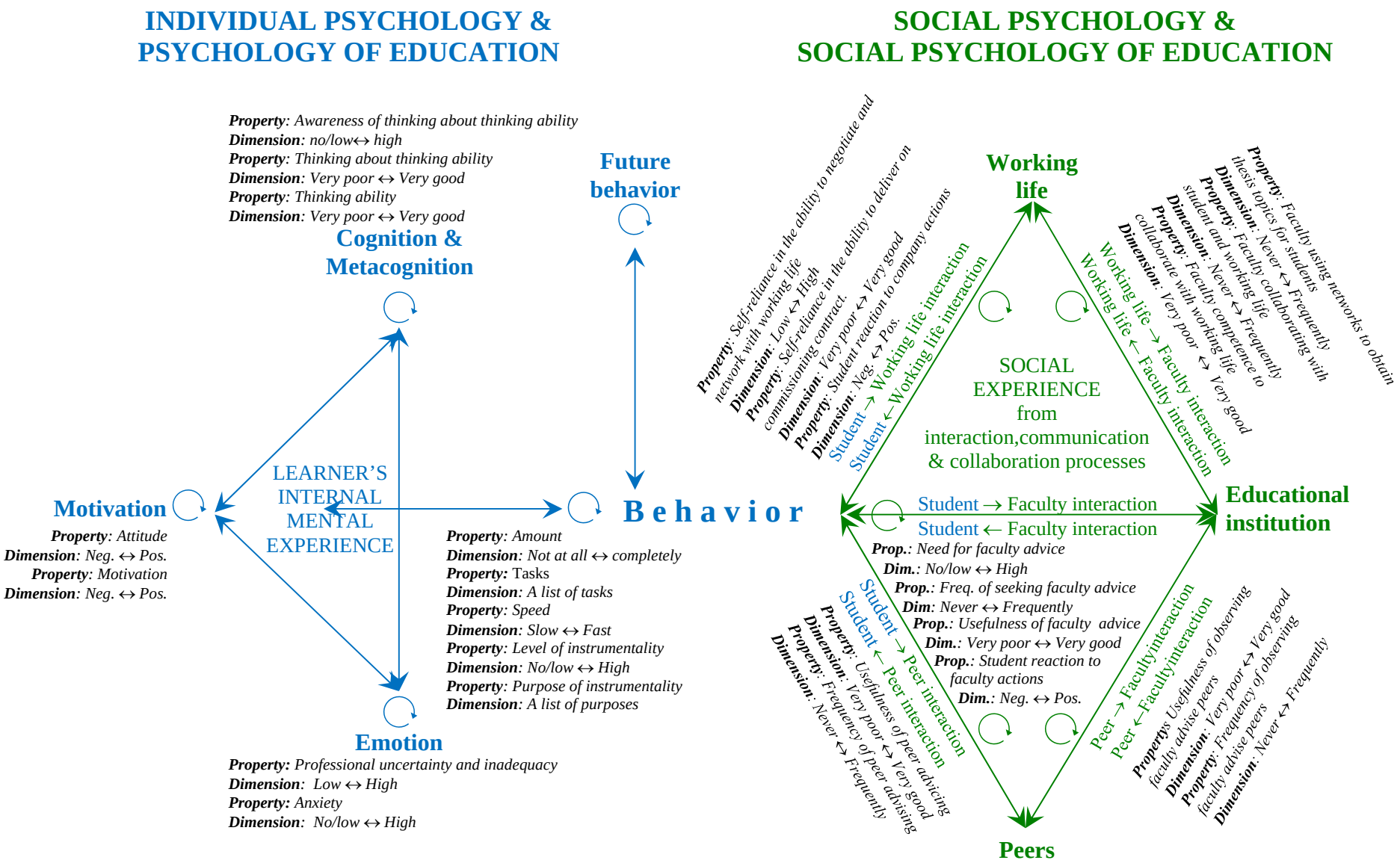

FIGURE 13. A scaled up version of the substantive grounded theory of student experience in the thesis/dissertation planning stage.

LEGEND **Blue** Student experience categories
Black Properties and dimensions of student experience categories
Green Stakeholders partaking in the student's experiences

From the field of research pedagogy, research self-efficacy (Holden *et al.* 1999; Lambie *et al.* 2014) is clearly a useful concept here. Some students possess an adequate or firm sense of research self-efficacy. This helps them pursue the dissertation as a learning task effectively from the viewpoints of *internal mental processes* and *social processes*. Other students are lacking in research-efficacy, which makes starting, sustaining and finalizing the dissertation process a challenge. When lack of motivation combines with lack of research self-efficacy, the student is likely to discard the learning task altogether.

From the viewpoints of social psychology and social psychology of education, it is common to conceptualize the tripartite collaboration between the student, the educational institution and working life organizations in the form of a triangle (e.g. Frilander-Paavilainen 2005, 34–35; Rissanen 2003, 17–18). This triangle emerged very clearly from the data and is also evident in the data quotations in this report. The interaction processes between the student and working life, and between the student and faculty contained much activity and many challenges. The interaction between the faculty and working life was quite limited, and needs further development to function effectively as a pedagogic resource in the learning process. In the substantive grounded theory, this tripartite collaboration triangle is visible as the upper part of the *social experience* diamond (figure 13). Behavior links the student's *internal mental experience* with actualized behavior within the *social experience* triangle, that is, with the domains of working life and higher education. Behavior also links to the future behavior category, that is, when behavior is engaged in in order to reach other goals in the future. In this case, the behavior takes on an intentional instrumental function.

The dynamics of the substantive theory highlighted the challenges students have negotiating and collaborating with working life representatives. Useful concepts that can help shed light on and extend further this problematic include transfer effect, border crossings and boundary objects from the work of Tuomi-Gröhn and Engeström (2001). A border crossing typically takes place when a student engages with working life organizations and authentic work tasks in order to learn. Successful border crossings require participation in a community of practice (CoP), where the student can apply that which was learned during studies to practical work situations. This is exactly what should take place in the thesis planning process investigated: the student should gain access to and engage in dialogue with working life representatives in order to find and define a commissioned thesis objective. Here the thesis plan and eventually the thesis itself take the role of boundary objects through which the learning is documented and the outcomes shared with the larger community. But, and this situation was reflected in many student verbalizations, working life is not necessarily welcoming students to their CoPs nor engage in dialogue where both parties could develop. This limits the chances for transfer of learning from studies to working life and vice

versa. It also means that the student does not get optimal opportunities for professional development through the situated learning process of legitimate peripheral participation as described in the theories of Lave and Wenger (2006).

The experiences students had with working life representatives yield themselves to an analysis through the the three-level model proposed by Frilander-Paavilainen (2007). Firstly, based on students' verbalizations, many organizational representatives approached learning as a phenomenon occurring at the individual level with focus on knowledge components in the cognition of one person. As a result, students were left to fend for themselves. To advance in the thesis planning, they needed additional faculty support, which at times remained thin due to the lack of more detailed information about the case organization and their needs. Such sessions could be frustrating for both students and faculty. Faculty support itself could also be deficient due to lack of faculty motivation, time and competence to advise thesis projects. In these cases, students tended to feel frustration with, and dissappointment and anger at faculty. The negative emotions could also turn against the student himself as feelings of professional and academic inadequacy and failure and, eventually, loss of motivation. Motivated, timely and competent faculty advising has the potential to play a key role in ensuring that students trying to collaborate with this type of working life organizations progress and succeed in the thesis projects.

Secondly, some students negotiated with organizational representatives who took a more communal and contextual approach with focus on the student as one actor in the social system of the workplace. These students were considered collaborators in the workplace, and received information and guidance from the organization. Students met with faculty mainly to fit the academic and organizational needs together, to get advice for further negotiations, to explore the options available to approach the task, and to get comments to text drafts. Lastly, some organizations embraced the student as a fully-fledged member in the organizational CoP with focus on sharing in the building of knowledge and competences. Students with this kind of opportunity consisted mainly of students who held a full-time job contract, or who had the exceptional opportunity to complete a thesis as part of a work placement. These two types of authentic collaboration facilitate effective border crossings, the sharing of many authentic boundary objectives and, thus, the transfer of knowledge and skills. When the student also receives motivated, timely and competent faculty advice, the learning process approaches the ideal.

In current educational theory, learning is conceptualized through social learning theories and socioconstructivism, where the learning takes place through participation in social processes with other stakeholders. During this participatory process knowledge is constructed collaboratively or co-constructed: the individual and the collaborative community both learn. (Tynjälä 1999, 150 –

158). In the substantive grounded theory presented here, also the bottom triangle of the *social experience* diamond represents this type of collaborative or socioconstructivist learning process; this time the student learns facilitated by faculty and peers.

When the *social experience* diamond is in action, the upper tripartite process feeds back to the lower one, and vica versa, even if the student's faculty advisors and peers never meet the working life representative. There is a lot of synchronous interaction between the student and working life, the student and faculty, and the student, peers and faculty. When this interaction is positive, a functional learning an action cycle is generated. However, if there are negative components in any part of the interaction, the functionality of the cycle is endangered. The less the student has resilience and motivation, and the lower his sense of self-efficacy, the more the cycle is in danger. In an ideal learning situation all four parties would meet in a quadripartite process represented by the *social experience* diamond, and engage in dialogue and collaboration making for a synchronous learning event between all four parties. This is reality in some degree programs already. Current pedagogic trends in vocational and professional education are in the right track in that they aim to create more quadripartite learning situations inspite of the many challenges they entail. Succeeding in all the interactions represented in the *social experience* diamond clearly requires time and good social competences of all parties. The benefits for each party need to be clearly established and expressed to ensure the motivation and commitment required for successful long term cooperation. Garner and Seacombe (2009) in their study highlight the importance of social relations competence for the conduct of student research. This important point is much too rarely made in research pedagogic literature, and requires further study. It is not enough, however, to ensure students' social competence: the social competences of all four parties need to be up to par for the quadripartite process to run well.

Conceptualized in this manner, the substantive theory that emerged from the data in the specific context of this study of a single degree program in a single UAS receives a more generalized form that is applicable to any level of education with similar border crossings and collaborative learning processes with multiple stakeholders.

4.2 The findings in the context of literature

The results of the current study are well in line with previous studies. To retain clarity, the discussion in this chapter is organized in the same order as the presentation of the substantive grounded theory in chapter 3.

Starting with the student's *internal mental experience,* firstly, the motivation to engage in the dissertation process proved a central dynamic for success in this study. Students' were motivated by opportunities to work in authentic job tasks with authentic business problems, to work for an organization of personal career interest, to develop organizational processes through a dissertation, and, overall, by the opportunities to learn, and explore career and organizational options for the future. Positive motivation begets positive emotions and the desire to apply cognitive competences. This, in turn, generates doing, and successful doing, in turn, promotes motivation, positive feelings and skillful application of metacognitive and cognitive talents. Whilst there were students who clearly suffered from what Valarino and Yaber O (2002) title the anything-but-research (ABR) syndrome, there were also many who found the dissertation a fascinating opportunity for reasons similar to the undergraduates many other studies. Todd and colleagues' (2004) found that students perceive the dissertation as an authentic learning and assessment method that motivates through a sense ownership, the opportunity to develop subject knowledge and skills, and the achievement of a thesis in its own right. Ylönen (2005) established that students were motivated and developed their expertise best when challenged by authentic working life problems. Leinonen's (2001) findings of what motivates students reflect the same: graduation, learning to do a thesis, developing expertise, producing information new to oneself, and intellectual development. Similarly Mäenpää (2014) found that nursing students experienced collaboration with working life partners as motivating as it contributed to professional growth and helped internalize the profession. In the current study, as in Ylönen's (2005), it was important for students to know that the dissertation results would be usable and that the company was interested in and committed to utilizing them. Lacking this, in the current study, students' motivation was often negatively affected. The most motivated students in the current study were cognizant of the same gains that URE students in the study by Seymour, Hunter, Laursen and DeAntoni (2004) reported: communication skills, personal-professional gains learning to think and work like a scientist, clarification or confirmation for career plans, and enhanced career/graduate school preparation.

The second internal mental process focused on *metacognition and cognition*. It, in turn, is intimately intertwined with the third internal process, *emotional* experiences of anxiety, and professional certainty and adequacy. Students clearly faced many metacognitive and cognitive challenges early on in the dissertation process in this study. The cognitive calibre of students varied from very poor to outstanding. Notably, even the most competent students reported as their biggest challenge the struggle to locate, formulate and narrow down a topic irrespective of whether they were engaged in a desktop study or a commissioned RDI project. Defining the theoretical

frame of reference (knowledge base), finding and evaluating relevant literature, and making methodological choices were perceived as difficult by the majority of the students. Procrastination was a common avoidance strategy when students faced too many challenges in the beginning.

These findings are in line with much earlier research. Tan (2007) found students struggling most with topic definition. In Head and Eisenberg's (2010) study, students reported as the three most difficult research process steps getting started, defining a topic and narrowing down the topic. Rowley and Slack (2004) established that students perceived the topic formulation stage as "a chaotic moment" where supervisory support is essential. Gatrell (1991) and Pehkonen and Kauranen (2012) also consider the topic selection stage to be the most problematic feature of the UG dissertation both from student and faculty perspective. Insightfully, Gatrell (1991) stresses that many of the benefits the dissertation experience can bring materialize only if topic selection has been carefully made. It facilitates engagement with a problem that the student has an intellectual and emotional stake in, and that, therefore, carries greater relevance and meaning for the student. Gatrell (1991) suggests that students be offered practical advice through a class discussion on topic selection, on what to look for in a dissertation topic (a well-formulated problem with originality, topicality, feasibility and sustainable interest to student), and on how to look for one. This kind of cognitive support together with workshopping topics with peers and faculty, and individual faculty consultancy was built into the thesis process reported in this study, and much utilized and appreciated by the majority of respondents.

Greenbank and Penketh (2014) found that the topic selection phase can contain internal tensions arising from the difference between of what students are personally interested in, and what they perceive faculty supports. This type of situation occurred a few times in the current study indicating that faculty was mostly open to students' own topic ideas. This allowed the students to choose topics that they had a personal professional interest in, and therefore a stronger motivation for. The reason may lie in the fact that UAS faculty is required to obtain a pedagogic qualification through a vocational teacher education program, whilst their university colleagues have not traditionally needed one.[27] UAS faculty commonly also have not only a master or higher level degree in the field they teach, but also work experience from this field. Thus, UAS faculty tend to appreciate the importance of designing and implementing functional and innovative learning processes over research to publish, not to perish. They quite often do not have as strong an interest in research, in general, or in a specific research area, in specific, as their university counterparts. From the viewpoint of the UAS student this may be a positive characteristic of UAS

[27] The situation is slowly changing as universities have set up policies aimed at ensuring that faculty members have some teacher education. It is not a legislated requirement, however, and internal university teacher training programs do not offer a formal qualification.

faculty. They teach and advise on a wide range of professional topics and can flexibly encourage students' own interests; while researching faculty may focus on their own specific research interests – at times at the expense of students, for example, by insisting students find topics in the faculty's area of research rather than what the student has a genuine interest in.

Finnish UAS thesis literature also stresses the topic definition stage as the most critical one in the thesis process (Opinnäytetöiden kehittämishanke 2006). Leinonen (2001) found that UG UAS thesis students perceived as most problematic areas selecting and demarkating a topic, planning and demarkating the theoretical framework, finding source material, and writing down the research questions, amongst others. Interestingly, just as in the current study, Leinonen (2001) found that demarkation difficulties arose specifically from the demands of the case company, student's own motivational profile and scheduling issues. Another point of note is that in Leinonen's (2001) study students considered the lack of process thinking competences an impediment in the process. This indicates similar metacognitive awareness as students expressed in the current study.

In Head's (2008) study students reported struggling with multiple challenges just as the students in the current study: procrastination, limiting the research topic scope, dealing with the information overload, trying to show originality and creativity, accessing and critically evaluating quality sources. Kawulich's (2009) observation of students having difficulties with understanding the role theory plays in developing and conducting research was also evident in the current study. Additionally, many students tended to enter the thesis process with a preferred method already decided, rather than matching the method to the research question. Qualitative methods were preferred by many to quantitative ones that were perceived as more difficult, complex and mathematical. Students' fear of quantitative methods has been well established in prior research as well as the tendency for students to have a preferred research orientation toward either qualitative or quantitative methods (Murtonen & Lehtinen 2003; Murtonen 2005).

Intellectual challenges in general are considered a key feature of dissertation processes in spite of the supervisory assistance often offered (Todd et al. 2004). Greenbank and Penketh (2014) found that students' ability and willingess for autonomous learning in the dissertation process is influenced by their previous writing experience, confidence in their ability to write, belief in the ability to achieve objectives they set themselves, and the relationship between student and those advising them. Ross, Burgin, Aitchison and Catterall (2011) use the terms liminal territory and transition experience to describe situations where students are faced with needing to learn new skills so challenging that emotional responses and stress are bound to occur before transition can be achieved. To help resolve or ease these cognitive challenges, some rely on more costly learner

centered experiential approaches (Todd et al. 2004) where students do inevitably experience the stress of inadequacy and uncertainty, while others recommend more structured dissertation processes guiding the student onwards with planned interim assessments (Rowley & Slack's 2004). Other effective solutions include preparing the students for independent learning and the dissertation stage earlier on in the degree studies (Rowley & Slack's 2004; Todd et al. 2004), offering individualized training and human-mediated services preferred by students. The latter include one-on-one coaching and faculty comments on drafts, which (Head 2008) considers crucially important.

Overall, the current study bears evidence to Badke's (2012) argument that students' information literacy competences are sadly inadequate. Badke (2012, 47) claims that students "have trouble formulating research questions/thesis statements, identifying information needs, locating relevant information by use of good search strategies, evaluating the information they have found, and applying it effectively to the research problem at hand". In the current study, as in Atkinson and Figueroa's (1997) investigation, students were often impatient and used minimal effort to execute literature search. The convenience of e-services has, however, improved the situation somewhat. I concur with ALA's (2000) and Badke's (2008, 2012) urgent calls for faculty to take research and literacy education more seriously to heart. Both need to be approached in a more organized manner in future curricular design. Badke (2008) argues aptly that students do not learn research and literacy skills by osmosis. As long as we fail to develop students' RDI skills throughout their studies, we will have students who have gaps in their research compeence in the dissertation stage.

The third internal mental process in the emerging grounded theory centered around the *emotional* challenges students undergo in the early stages of the dissertation process. Feelings of anxiety, and feelings of professional uncertainty and inadequacy were common even among the cognitively advanced students. As a consequence, faculty's assistance and encouragement was much used and appreciated by the majority of students. Many also perceived the benefits of peer learning and advising after their initial doubts had been alleviated by the first rounds of peer comments. These findings are in line with prior research about research methods anxiety in general (Papanastasiou & Zembylas 2008). Tan (2007) named the period of early dissertation difficulties aptly "the groping stage" as it was characterised by feelings of insecurity and fear due to feelings of inadequacy, and fear about the ability to fulfill the requirements relying on established level skills and knowledge. In Tan's (2007) study, these feelings often persisted even after students received intellectual and moral support from faculty and peers, while in the current study students often voluntarily offered reports of at least some sense of relief. Tan (2007) attributed the feelings

in the groping stage to lack of research-based learning in prior courses. The same attribution can be made in the context of the current study as the students had a total of 2 ECTS (54 hours) of research methods education in quantitative methods linked to a 4 ECTS (c. 108 hours) substance course in marketing research. Additional research education depended on the interests of course lecturers and therefore varied from none to a few ECTS depending on the faculty teaching each academic year. Silén (2000) found a similar groping phenomenon while studying student-centered learning processes in HE in general. In his study, students' verbalizations indicated a dialectical movement between chaos (frustration) and cosmos (stimulation). Frustration arose from the fear of not learning enough or not learning the right things. Stimulation took over when the frustration had been resolved, and the student could feel comfort and pride in their capabilities. (Silén 2000.) This movement between chaos and cosmos was quite evident in the current study, and formed a key stress dynamic in the thesis planning process. Most students found it difficult to bear the uncertainty that inevitably belongs in every RDI process.

Looking at the student's *social experience*, positive *student–faculty interaction* proved essential. Competent, encouraging and timely faculty consultancy was much appreciated by the majority of students in this study. Students reported receiving motivational, cognitive and emotional benefits from these sessions. Doing emerged as the result of these three benefits. Some faculty members met, or even, exceeded students' expectations for effective thesis advising, while others failed to do so. Students attributed the latter to busy faculty schedules, the faculty member's personal unwillingness to invest in student advising, the inability to recognize students' needs for assistance, or the inability to provide the kind of assistance students expected. Dissatisfaction with thesis advising provision has also emerged in prior research. Kilpiäinen (2003) found students critical of thesis advisors' knowledge of science and competence to advise theses often placing the problem on the person of the advisor. In his study the thesis advising provision was critiqued for being uninformative, one-sided, rigid, lacking in creativity and critical approach.

Students sought faculty consultancy for many reasons relating to *motivational*, *cognitive* and *emotional* challenges as well as challenges with *getting* things *done*. From the viewpoint of *motivation*, students were concerned about lacking motivation, or losing it because of the challenges of finding a topic. *Cognitively*, most students needed assistance with some or all the early research tasks. *Emotionally*, students were concerned about not having the knowledge and skills needed to engage in a thesis, frustrated at lacking topic ideas, unsure and nervous about how to prepare to contact or how to negotiate with an organization for a commissioned thesis, or they had received negative comments from organizations or faculty they wished to air and discuss. From the viewpoint of *doing*, students sought coaching for negotiation situations, and comments to

introductory emails and thesis plan drafts so that they could take the next step. Students who received the kind of face-to-face or email advising they expected often expressed at least some level of motivational encouragement, emotional relief and cognitive clarification.

These findings are reflected in earlier studies. Todd and colleagues (2004) stress that supervisor assistance is important to help students manage the emotional challenges in the dissertation process. Similarly Frilander-Paavilainen (2005) notes that students often approach the thesis process with curiosity and fears about the amount of work to be done and doubts about having the competences needed, and staff is in the position to alleviate these negative feelings by stressing the competences students already possess. In his study, Lopatto (2003, 140) divided UG dissertation support to structure and consideration items and discovered that students perceived consideration items ("characteristics of mentor behavior that contribute to the emotional and social needs of the student") more important than structure items (course content, learning tasks, the clarity of the learning objectives, the instructor's preparation, the use of class time, the facilities and equipment, scheduling, provision of primary literature and outcome requirements), which were also perceived as important. Lack of consideration items led to increased anxiety and reduced research efficiency. Along the same line, Aittola (1995, 150) suggests that psychosocial support offered by thesis supervisors may at times supercede that of professional support. Lopatto (2003) and Jamieson (2006) report that students consider interpersonal features, such as, openness to student's views, helpful and concerned manner of behaving and availability for consultation important in thesis supervisors. Effective faculty guidance is crucial from the student viewpoint (Russell, Hancock & McCullough 2007), especially in the thesis planning stage to help set thesis objectives and decide on research design (Ylönen 2005). Ylönen (2005) warned that lack of support at this stage could lead to lowered motivation, perceptions of poor advising provision and lack of depth in the thesis learning experience. This was apparent in the current study also. Curiously, some students overestimated their own research abilities, and did not seek faculty advice like in the study by Cox and Andriot (2009). Additionally, some of these students turned down any faculty advice offered, often with the consequence of dropping out from the course.

Studies show that faculty can also be a source of negativity (Forte 1995), as faculty perceptions of students' readiness for research, low expectations of students, and attitude toward student research may influence negatively students' research interest (Lazar 1991). There were also some cases in the current study, where students reported losing interest in thesis planning or in a personally interesting topic due to discouraging and depreciative faculty comments about the topic, or the student's person or competences. This highlights the need for faculty to bear in mind two things. Firstly, the dissertation is the student's RDI project and does not need to match faculty

interests. Secondly, encouraging communication is the key to maintaining and generating motivation. When a student needs corrective feedback regarding their thesis plans, it should be given in a sensitive and supportive manner to avoid exacerbating existing feelings of anxiety and inadequacy. The status and power imbalance between faculty and students continues to exert its influence, even though current pedagogical trends aim to reduce the imbalance.

Extrapolating on the students' comments in this study, it is safe to state that viewed through Dysthe's (2002) three models of supervisory relationship, the students appreciated most the collaborative partnership model, where the supervisor–student relationship is symmetrical, the thesis is viewed a joint project, and the supervisor supports the student by encouraging and nurturing independent thinking.

Overall, the variety and the challenging nature of motivational, cognitive and emotional aspects of student experience in the early stages of the thesis process set great demands on faculty. These challenges highlight the need for faculty to be aware of and sensitive to students' concerns, and able to advise and encourage students so that these challenges do not unnecessarily detract from the application of – at times limited – motivational, metacognitive, cognitive, emotional and social competences. Faculty should also partake in the joys and successes students experience during the dissertation journey, so that these positive feelings would motivate students onwards even more powerfully. Additionally, as long as information and research literacy education does not get more attention in the curriculum, faculty must be willing to answer the most basic questions about how to do research.

Moving onwards in the *doing* of the thesis plan was also often hampered by practical concerns, such as, the study load of simultaneously running courses, demanding work schedules, issues of personal health, and financial difficulties. These results concur with those of Greenbank and Penketh (2014) and Todd and colleagues (2004). Curricular planning can target the problem of simultaneous study loading. Curricular scheduling for dissertation semester(s) can facilitate creating a dissertation space (term borrowed from Anderson, Day and McLaughlin 2008) and dissertation time for the student simply by allowing 2–3 days a week for library and field research, peer support systems and faculty consultations.

From the viewpoint of the *student–working life interaction,* learning in the context of working life both daunted and motivated students. Many considered it an opportunity to learn in an authentic context studying an authentic problem, to build the CV and to network for a career. Yet, getting started with a working life based commissioned thesis posed the key stumbling block in the thesis planning process. Negotiations and collaboration with commissioning companies were considered by students a major factor either facilitating or hindering progress early on in the thesis

process. Some found themselves waiting for responses to repeated calls and emails for 1–6 months even in cases where the organization had initially given their consent to meet and agree on a topic. Others tried to reconcile politically based organizational limitations and conditions for the project with the academic requirements set for a bachelor thesis. According to students' own comments, some organizations failed to understand the learning objectives of the thesis, focused on maximizing their own gain from the thesis project and failed to provide advising just as in Frilander-Paavolainen's study (2005, 106, 161).

These difficulties are familiar from prior research. Rowley and Slack (2004) highlighted students' need or supervisory support because they may well lack the requisite work or life experience and networks to locate a suitable context for their dissertation research. In the current study, this was often the case, especially for international students and students who had enrolled to UAS studies soon after graduating high school with no or minimal work experience. Mäenpää (2014) found that students undertaking a commissioned UAS bachelor thesis experienced difficulties trying to fit together the wishes of all the stakeholders, to match multiple schedules, and to manage varying levels of commitment. Students experienced similar problems in this study and resorted to faculty advice to resolve these challenges when working life was not willing to facilitate. In spite of the recognition of the importance of faculty engagement in the tripartite system, faculty often fails to enter the process, with the result that both thesis objectives and thesis process may remain unclear for students and working life alike (Frilander-Paavilainen 2005). Tripartite negotiations were a rare event in the current study also. The tripartite process and, specifically, the *faculty–working life interaction* component, clearly needs more effort from the faculty in the degree program studied.

Working life has its part to play the process also. Students and faculty cannot and should not do it alone. The way the working life thesis advisor approaches learning in the workplace can facilitate and empower, or hinder and frustrate student learning (Frilander-Paavilainen 2007; Rissanen 2003). According to an internal UAS study into its thesis processes, students considered problems with commissioning company one of five key factors hindering progress with the thesis. Working life attitudes and willingness to advise the student generated very different motivations and learning opportunities in this study also. At best, the student was "fired up" to work with highly committed commissioning organizations generous with their support. At worst, the student was given a topic without much further contact, support or interest from the company. Faculty needs to take a facilitative role to alleviate the problems in the *student–working life interaction* process.

The challenges faced by students undertaking commissioned theses merit more attention from both faculty and working life. Kouvo, Stenström, Virolainen and Vuorinen-Lampila (2011, 78) prepared a model of the factors causing delays in and dropping out from studies. I suggest that challenges with commissioned theses be added to this model under the component "transfer system and the societal context". Considering the importance that commissioned theses carried in the national RDI policy and the HE funding instrument previously and still do, albeit in a more limited role, and the excellent authentic professional learning opportunities they offer for UAS students, it is important to consider the impact of commissioning organizations on the thesis process, and, consequently, graduation times. It is easy to concur with Mäenpää (2014) and Below and Lakovaara (2005) that collaboration forms between UAS faculty, UAS thesis students and working life need further development specifically because commissioned theses can play an important part in professional learning and development. In general, UASs need better collaborative models to collaborate successfully with working life in the arenas of tuition and RDI (Sarajärvi, Salmela & Eriksson 2013). Not only students, but also faculty needs RDI-competency training (e.g. Saranki-Rantakokko & Lahti 2014) so that faculty can train competent professionals for working life (Koivunen, Remahl & Isohanni 2011).

From the viewpoint of *student–peer interactions*, social learning methods clearly helped students open to the social learning approach get motivated, manage emotions and develop thinking through faculty facilitated class discussions, peer advising and peer example. These findings agree with Baker and colleagues' (2014) experiment with social learning methods in the dissertation process, where students considered peer situations an arena of "multiple brains" and a source of encouragement. Vesterinen (2003) found that students considered team advising useful in facilitating continuous progress in the thesis and speeding up thesis work. Collaborative learning also increased student motivation, and improved group spirit and learning results. Individual advising was considered important in content related questions specifically. (Vesterinen 2003.) Similarly, Leinonen (2012) found that students perceived peer support as helpful in producing new communication skills, developing trust relationships and aiding with self-regulation. Students operate in peer situations according to their current problems, mood, motivation and competences (Leinonen 2012). In the current study, it became evident that these factors can result in a positive cycle of progress, or a negative cycle of getting stuck in the thesis planning. In this study, as in Baker and colleagues (2014), the academic contribution of the supervisor as the facilitator of peer sessions was appreciated. The social learning process can include all the members of the quadripartite model. Frilander-Paavilainen (2005) encourages approaches that allow students to discuss, critique and interpret each others' work in peer groups, and with faculty and working life

organizations as a way to develop both individual and communal expertise during the thesis process.

To sum up the discussion on the interaction relationships, one can conclude that managing the stakeholder set discussed above places high demands and value on the social relationship competences of students. This finding agrees with Garner and Seacombe (2009) who have highlighted the importance of developing and maintaining social relationships as part of the social sciences research process: management of social relations influence the conduct of a research project, the quality of data collected, and, also, bear on whether the research is conducted in an ethical and humane manner.

Overall, these results draw attention back to Maassen and colleagues' (2012) report covered in chapter 1.2. The results from the current study appear to reflect the strange and at times confused position UAS students hold as RDI actors at the national policy level. They should be RDI actors, but the status quo does not always facilitate it. Students do not receive enough IL and research literacy education, working life is not necessarily willing or competent to benefit from student RDI, and faculty does not always support students' RDI processes with adequate advising.

5 CONCLUSIONS

This concluding chapter presents the key findings, and discusses the theoretical and practical implications of the study. The study is also evaluated utilizing criteria relevant for GT studies.

5.1 Key findings

To receive a bachelor's degree from a Finnish UAS, the student is required to produce a thesis or dissertation with the scope of 10–15 ECTS in his field of professional studies. These theses form one small component in the national RDI policies that aim to support and develop local and regional business and economy. In 2014, UAS students produced and published a total of 22 553 bachelor theses. This is an indicator of the multitude of students, faculty and working life organizations that are somehow involved in the UAS bachelor thesis process annually. This equals hundreds of thousands of hours and innumerable advising sessions and meetings annually.

The literature review covered a wide range of international and Finnish research reports on UG dissertations and effective methods for teaching research skills. The review concluded with the finding that there were no prior studies focusing specifically on the planning stage of the dissertation or on student experiences of this stage. From the methodological viewpoint, only one superficially relevant study used GT as the research strategy. Thus, to fill this substantive and methodological gap in research, the current research focus was chosen, and GT selected as the qualitative research strategy to explore students' experiences.

The objective of this study was to find out how undergraduate UAS students in business experience the first stages of the UAS thesis process, specifically, the thesis planning stage. The study was implemented over a 14-month month period from October 2011 to January 2013 whilst teaching five different implementations of the Thesis Planning Workhop with a total of 138 participants. The data consisted of documentary data gathered from students in the form of student emails and stories, and of participant observation notes taken by me on one-on-one faculty–student consultancy sessions and classroom situations. A total of 448 items of data were gathered and analysed into 899 rows of code.

The key outcome of the study was presented in the form of a substantive grounded theory focused around the core category *getting the thesis plan done*. This category expressed the key problem the student needed to resolve. The theory highlighted the *internal mental experiences* of the student through the categories of *motivation*, *metacognition*, *cognition* and *emotions*, the stakeholders in the thesis process (student, peers, working life representatives, faculty), and the student's *social experience* arising as these four stakeholders interacted through bilateral and tripartite relationships. Bilateral relationships included *student–working life interaction*, *student–faculty interaction*, *student–peer interaction* and *peer–faculty interaction.* Tripartite relationships included the triads of *student–working life–faculty interaction* and *student–peer–faculty interaction.* Additionally, a quadripartite model of interaction and collaboration was proposed, in which these four stakeholders would collaborate and develop together. Each of these categories was described in further detail through their properties and the dimensions of the properties. The substantive grounded theory utilizing *in-vivo codes* was presented in chapter 3, page 124, and a scaled up or more generalized version of the theory in chapter 4, page 142.

Findings clearly indicated that whether the students were motivated or not to engage in the thesis process, they felt either suitably or overly challenged by it. This was evident in the motivational and emotional changes and challenges during the process, and the metacognitive and cognitive issues students wrestled with. Student's ability to take action to resolve the problem of *getting done* depended on whether the *internal mental experience* supported active and successful *behavior* individually and as a member in the interaction processes with three other stakeholders. Students consulted faculty on issues of motivation and emotion, and a variety of metacognitive and cognitive challenges related to the RDI process to receive assistance to manage themselves, the thesis planning process and the negotiations with working life.

The majority of students experienced commissioned theses as a motivating opportunity for professional learning, career building and networking. However, negotiation, communication and collaboration between students and working life organizations did also prove to be a problematic area for three reasons. Firstly, students themselves were not always knowledgeable, experienced, skilled or self-reliant enough to negotiate and collaborate successfully with organizations independently. Secondly, whilst many working life organizations were eager to work with young professionals, committed to build functioning collaboration relationship, and skilled at supporting the student during the thesis planning process, this was not true of all organizations. Students who contracted with organizations that were neither eager, willing, nor skilled at collaborating with and supporting the student experienced at times severe motivational, cognitive and emotional challenges. In many occasions, this resulted in weeks' or even months' long delays in the thesis

process, and great frustration for the students involved. Thirdly, students needed and requested faculty advising to prepare to contact and negotiate with working life organizations. Additionally, students needed extra faculty assistance in cases where working life organizations were not forthcoming enough with the requisite information, or requested the students to engage in RDI projects with much too wide a scope from the academic viewpoint. Faculty was usually in contact with the working life organization only vicariously through the student. This made communication unnecessarily complex, inefficient and prone to errors. Few faculty met with the student and the organization for a shared tripartite dialogue although much UAS pedagogic literature calls for this.

Students experienced faculty advising mostly useful in terms of building motivation, managing negative emotions, processing cognitively challenging issues, and getting ready to do. Advising was often the requisite for student to start or to continue with his *doing*. Students were very appreciative of timely, competent, committed and encouraging advising provision by easy-to-approach faculty. Not all faculty was willing or able to offer such services, however. Students disappointed with faculty advising attributed the problem to faculty's lack of interest, time and competence to advise students. In cases where difficult working life relationships coincided with unsuccessful thesis advising, students easily lost motivation, and experienced negative emotions and frustration toward working life representatives and faculty.

Lastly, at least initially, some students were unappreciative of or openly negative about the use of peer advising and peer debriefing sessions. After a few sessions, those open to social learning approaches grew to understand the benefits they could receive and the assistance they could offer to peers, while mutually beneficial learning was taking place. For these students peer advising became a positive force in the thesis planning process: it helped resolve difficulties, generate new ideas, and bring up new questions in the student's discussions with faculty. Some students were, however, either unwilling or unable to benefit from peer and faculty advising. This tended to result in low quality thesis plans, and delays and dropping out from the thesis process.

The overall dynamic of the substantive grounded theory relies on the synergy, firstly, between the student's *internal mental processes* of motivation, metacognition, cognition and emotion, and secondly, between the student and the other stakeholders in the *social experience* process. If all these components are positive, a positive cycle tends to ensue. If even one of these components is negative, a negative synergy may ensue. Faculty as the facilitator of learning processes is in a crucial role to ensure that the cycle becomes and remains supportive of learning.

5.2 Implications and suggestions for further research

For purposes of exploring the theoretical and practical implications, and the needs for further study, I argue here for three related development needs. Firstly, there is a clear need to develop an RDI competence framework for UAS students and faculty. Secondly, based on the competence framework, RDI pedagogies need to be further developed to support the development of these competences. Thirdly, there is a need for a new model of collaboration in RDI projects. These three measures can eventually help solidify UAS bachelor students' competence and position as the RDI actors that they should be, and as future professionals consuming and conducting RDI. The discussion of these propositions below is intertwined.

RDI is fashionable and powers economies according to a myriad of policy papers and innovation theorists. Yet, incredibly, in spite of many efforts, I was unable to locate an RDI competency model or framework either in Finnish or foreign literature. Clearly, there is a need to develop one. To ensure faculty's and future graduates' ability to consume and conduct RDI in their daily work, they must have the opportunity to learn the RDI competences needed in future working life. These competences cannot be taught without an understanding of what they are. Extending the results of this study to RDI competence model development, at least twelve existing concepts, skills and competency sets need to be analyzed and condensed to form a preliminary model. These include existing models of

- general goals of research, development and innovation
- research literacy
- research ability
- research ethics
- reflective researcher
- information literacy
- academic writing skills
- innovation skills
- negotiation skills
- business consultancy skills
- media skills
- emotional management
- social relationship competences

The question of RDI competences is linked to the concept of research self-efficacy. The concept of research self-efficacy has been defined and investigated (e.g. Holden *et al.* 1999; Lambie *et al.* 2014). But more research is needed to establish in more detail what it is and how its development can be nurtured. Specifically, in the context of RDI competences, the concept RDI self-efficacy needs to be defined in such detail that pedagogues can start developing and nurturing it purposefully.

Building on the above preliminaries, I suggest that the key findings discussed in chapters 3 and 4 be summarized into a quadripartite system of collaboration and development (figure 14). The dominant tripartite model of interaction between students, HEIs and working life organizations is deficient in an age where pedagogy is as socio-constructivistically oriented as it currently is. The quadripartite model suggested below adds student's peers into the interaction process as a new forceful dynamic that is currently too often underused or totally overlooked. The model is applicable to any educational institution collaborating with working life through faculty- or learner-led RDI projects irrespective of the size of the project or the educational institution.

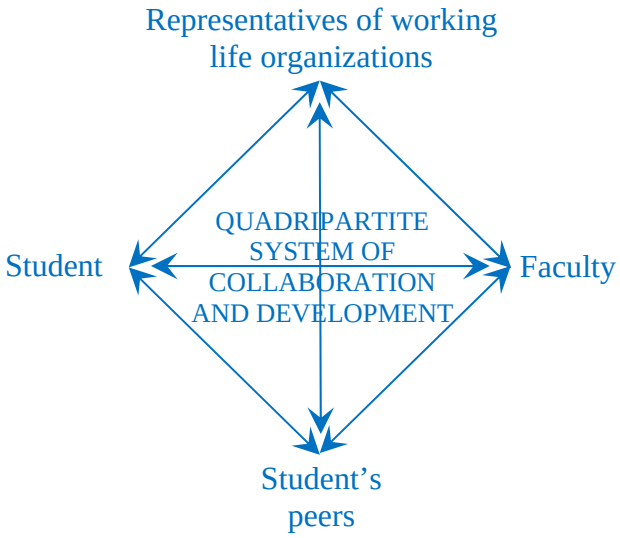

FIGURE 14. The quadripartite system of collaboration and development

To ensure success in the form of mutual learning and benefits in RDI and thesis projects in this quadripartite system, it is essential that all parties are motivated, committed and competent to play their part, and keenly aware of the stumbling blocks hindering effective collaboration and development. Based on the findings in the context of this study, it can be argued that the stakeholders in the quadripartite system are too often outside their ZPDs. This results in feelings of unnecessary uncertainty, inadequacy, fear and stress, and, consequently, possibly also in

ineffective and inefficient RDI activities, and delays in studies and graduation. Measures need to be taken to develop the RDI competences of all the stakeholders.

The competence development process must start with faculty. Firstly, faculty needs to know what RDI competences they should teach to UAS bachelor's students and through what pedagogical interventions. Secondly, students need to be taught RDI competences throughout their studies starting from the freshman year. This ensures that students are – at least close to – their ZPDs when RDI competences are needed for course, thesis or project purposes. Thirdly, working life organizations need to be clearly and briefly informed of what is expected of them as collaborators. When all stakeholders are motivated, committed and competent, true CoPs can develop at all the tips of the diamond, and between the stakeholder communities.

Let's start with the faculty, who in educational institutions is the party in charge of functional pedagogic and advising arrangements. For faculty to function effectively and efficiently in the quadripartite system, it is important both from the viewpoint of theory and practice to implement further studies on those faculty attitudes and competences that nurture student learning and development in dissertation processes, and mutually beneficial collaboration between students and working life. Specific attention should be given to the development of models that support collaboration between faculty and working life organizations and representatives. Some models exist, but the efficiency and effectiveness of such collaboration still often leaves much to hope for in the current realities of institutional life. Additionally, there are currently no competence models explicating the competences faculty needs to master to collaborate and liaise successfully with working life, and between the student and working life. Current supervision guides for faculty are not adequate without the inclusion of these competences. Management in educational institutions need to develop resourcing models for faculty that do not require faculty to squeeze working life relationship development and management into the standard resource given for developing and implementing teaching. Lack of resourcing can be a major hindrance for the development of such relationships.

Secondly, the student as the primary learner in the education process needs to be prepared to function meaningfully in the quadripartite system, specifically, in the role of a dissertation project manager. Successful management of a typical UAS thesis, which is a commissioned RDI project, requires a wide variety motivational, cognitive, emotional and social skills. There is a wealth of literature on IL competences and competence development, and hundreds of research and dissertation guides written for students. Yet, there is a shortage of curricula that develop these competences in an organized and consistent step-wise manner from the first year of study to graduation. More research is needed to develop competence models of what the student needs to

master to approach, negotiate and collaborate with working life organizations so that mutual learning and development becomes a reality. Working with a challenging cognitive task with several stakeholders involves for most students a heavy component of emotional experience. Since so much stress and anxiety is related to the dissertation processes in general, as well as in the thesis processes reported here, new methods of supporting the student are needed. I would suggest modelling specifically the emotional aspect, that is, the fear, anxiety and stress experiences in more detail, and developing emotional scaffolding methods for faculty and student use to complement the many cognitive methods already in use.

Intervention studies are needed to model the grassroots processes that support the tripartite collaboration between student, faculty and working life representatives. The management of a tripartite relationship is always more complicated than that of a bilateral relationship. The findings also indicated that the metacognitive and cognitive strategies needed to develop, formulate and demarkate a topic were elusive to students. Since topic definition is the seed from which any RDI process starts and that directs the process, it is crucial to research how students can learn these skills efficiently and effectively. The negative motivational and emotional impacts of getting stuck on the first stages of the RDI process must not be underestimated. If getting the RDI ball rolling is too difficult, students keep putting it off or experience much distress in the starting phase. The solution lies in facilitating the learning of RDI competences in slow increments through out studies, so that eventually the student's sense of self-efficacy in RDI tasks is adequate enough for engaging in the thesis and other RDI projcts.

Thirdly, when national RDI policies urge educational institutions and students to collaborate with working life to further the development of both for-profits and non-profits regionally or at a wider scope, it is crucial to develop and incentify the representatives in working life organizations to take these opportunities to heart. Research needs to be undertaken to model the competences working life representatives need to possess to collaborate successfully with both faculty and students engaged in RDI projects with a binary purpose of education and organizational RDI. Additionally, intervention studies are needed to experiment with the best ways to develop these competences with minimal loss of working time needed to engage in "actual" organizational duties. Yet, commissioning organizations need to understand that some time and effort is needed from them also to ramp up such collaborative processes.

Fourthly, peer learning and advising needs to be taken into more effective use. Leaving each student to experience the stumbling blocks of the RDI or dissertation process alone is discouraging – at times, even to the most gifted student. It could also be considered unethical of educational institutions and their faculty whose duty it is to adequately prepare the student for working life and

RDI tasks. From the viewpoint of faculty resourcing, it is also highly ineffective use of working time to advise students individually in matters that could be taught more effectively and insightfully in larger groups utilizing peer learning and example. Several successful intervention studies have been reported in the literature, and need to be taken into active use.

Dissertations and RDI projects offer excellent opportunities for authentic professional learning both of substance specific and generic working life skills. Students themselves, faculty, working life representatives and peers can together create dissertation spaces in various groupings of the quadripartite system of collaboration and development. These social learning opportunities support the student also through the individual learning that always forms and essential part of a dissertation journey.

5.3 Evaluating the study

GT theorists have proposed a variety evaluation criteria for GT research, some of which are overlapping (in temporal order: Glaser & Strauss 1967; Glaser 1978, 1992; Strauss & Corbin 1990, 1998; Charmaz 2006; Corbin & Strauss 2008; Birks & Mills 2011). In their seminal GT guide, Glaser and Strauss (1967, 237) proposed four criteria: fit to the substantive area in which the theory will be used, understandability by laymen concerned with the area, generality of applicability to diverse situations within the substantive area, and control of the structure and process of daily situations. Later on Glaser (1978, 142–143; 1992, 15) added the criteria of fitting the data, working in the sense of exhibiting explanatory and predictive power and, therefore, showing relevance to the people concerned, and modifiability to later variation allowing the theory continuous relevance. Important from the theoretical viewpoint are also the criteria of parsimony and explanatory scope discussed by Glaser in 1992 (116). Whilst explanatory scope is quite similar to generality of applicability, parsimony is a more recent criterion for GT research. It sets a parsimonious and elegant theory as the goal of GT. Here the evaluation is done relying on these criteria of, on the one hand, the processes used to derive the grounded theory, and, on the other, the applicability of the theory itself (Birks & Mills 2011, 152).

The processes used to generate the substantive grounded theory that emerged from this study followed the key GT processes explicated in chapter 2, to which I refer the reader to avoid repeating what has already been stated. Chapter 2 also delves into how triangulation was utilized. Emergence was the principle in the theory building. It is fitting, however, to take up here the issue of researcher's sensitivity, which has been an important concept in GT processes from its early beginnings. Corbin and Strauss (2008, 32–33) define sensitivity by contrasting it with objectivity.

Sensitivity requires that the researcher sensitizes himself to the experience of the research subjects, aims to take the role of the other through immersion in the data, and eventually presents the data from the viewpoint of those studied in all its nuances, significancies and meanings without forcing the data into pre-existing models and theories (Corbin & trauss, 2008, 32–33).

As a practitioner and senior lecturer of human resource management, psychology, workplace supervision, thesis supervision and education there was wealth of psychological, educational and HRM theories I had to consciously "set aside" to avoid forcing the data. To do this, I read and reread the data seeking for potential recurring *in vivo codes* expressing what was happening in the student's experience. I focussed on finding out what students were doing, why, how, at what, with whom and for what purpose. Students' verbalizations contained many expressions about being (un)motivated, thinking, thinking about thinking and feeling. Since I was keenly aware that these expressions matched the age-old division of the parts of the human psyche/mind into conative (motivation, willing, wanting), cognitive (thinking, intellectual operations) and affective (emotions, feeling) operations, I waited until these categories were oversaturated before accepting them. I purposefully avoided using psychological and educational concepts and terminology whilst analyzing data, and integrating and presenting the substantive theory. I tested and incorporated them in my work processes and reporting as late as possible in the scaling up stage to avoid forcing the data. The tripartite model of working life, student and faculty interaction was also very familiar to me. It started to show quite early in the emerging theory, leading me to question myself and the data in more detail. I wanted to make sure it did not make me blind to other patterns possibly extant in the data. This led to the discovery of the diamond, rather than the repetition of the well-established triangle.

The substantive theory generated in this study should be applicable or generizable – that is, have explanatory scope – to any educational institution aiming to engage students in collaboration with working life through dissertation or RDI projects. The theory is well grounded in the reality of daily student experience as it emerged from students' own verbalizations collected from natural interaction situations and experiential stories. The triangulation of the different data types all yielded the same results irrespective of time and type of data. To illustrate the grounded nature of the theory to the reader, a range of quotations from all data types were utilized to exemplify the indicators for the relationships between categories, the categories themselves, their properties and the dimensions of the properties. Thus, the theory fits both the live data, and the context of the educational quadripartite interaction process. The terminology used in the substantive theory and the theoretical formulations raised from the substantive level through the integration of extant concepts is clear and understandable. The former utilizes students' own expressions, that is, *in vivo*

codes, and the latter common theoretical concepts familiar to educators and psychologists. The theory offers many points and dynamics for the control of the structure and process of daily situations in the early stages of dissertation and RDI project planning. In that sense, the theory works as it both explains and predicts what goes on when the theoretical categories take different values on the dimensions.

Parsimony of the emergent theory proved a key criterion during the theoretical integration process. I reflected at length in memos how to balance parsimony with the rich and dense descriptive detail available in the data. Eventually, I prepared two alternative versions of the theory in order to reflect on them, and then make an informed decision. I opted for the parsimonious version presented in this report. I discarded the more descriptive version as it, in my opinion, represented more the outcome of the QDA method than the GT method. The dynamic nature of the theory was harder to perceive from amidst the descriptive detail.

To enhance both the control aspects, and the explanatory and predictive power of the theory, hypotheses were drawn to exemplify the most common relationships. These hypotheses can be investigated and verified through further research. As the theory works, it is also relevant to the people concerned. Since the faculty is in the status and power position to design and scaffold the processes studied, the theory offers ideas specifically to faculty on where to pay special attention to and how to control the process. Also working life representatives can benefit from exploring the dynamics presented. Student RDI projects and theses form a viable recruitment route: but to evaluate candidates accurately, the organization must provide the support the candidate would normally receive in the daily conduct of his duties. Lastly, the theory can be modified through further study by adding categories or dimensions to extant categories, and changing or adding stakeholders to the process.

5.4 Closing words

Maintaining sensitivity to the students' experience is something I aim to do as an educator as a normal part of my daily practice, because I believe in the fundamental power of motivation and emotions in the learning process. During the research process I immersed myself even more intensively and purposefully into what was "going on", and, due to that, coexperienced the students' experience even more keenly. I want to here express my heartfelt gratitude to all the students partaking in this study for being so willing and open to share their frustrations, fears and joys during the thesis planning stage. Without their generosity this study would not exist. I am also

thankful to the many colleagues who encouraged me to continue with this topic so close to my professional heart. I hope the report offers them some proposals for their daily work.

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Attachment 1(2)

Finnish HE degress classified by learning results and degree objectives. The column *alempi korkeakoulututkinto* is relevant for this study.

(Source: Korkeakoulujen viitekehys –työryhmä 2005, 28).

		Alempi korkeakoulututkinto	Ammattikorkeakoulututkinto
TIEDOT *(knowledge)*	**Laajuus** *(breadth)*	Oman tieteenalan laaja-alaiset perustiedot.	Oman ammattialan laaja-alaiset perustiedot.
		Käsitys tutkintoon kuuluvien tieteenalojen kattavuudesta ja rajoista sekä tärkeimmistä osa-alueista.	Kattava ymmärrys tutkinnon ammatillisen tehtäväalueen sisällöistä, rajoista ja tärkeimmistä osa-alueista.
	Syvyys *(depth)*	Tutkintoon kuuluvien tieteenalojen tieteellisten perusteiden tuntemus, johon sisältyy alan tutkimuksen keskeiset käsitteet, teoriat ja menetelmät.	Yleiskuva ammatillisen tehtäväalueen asemasta ja merkityksestä yhteiskunnassa, työelämässä ja kansainvälisessä toimintaympäristössä.
		Kyky hahmottaa oman tieteenalan perusteet käsitteiden kautta. Kyky hankkia ja arvioida kriittisesti oman alan tietoa.	Kyky tunnistaa ammatillisen tehtävä-alueen keskeisiä ongelmakokonaisuuksia ja arvioida niiden erilaisia ratkaisuvaihtoehtoja.
		Tutkinnon suorittaneen hankkimat tiedot perustuvat yliopistossa harjoitettavaan tutkimukseen tai taiteelliseen toimintaan sekä alan ammatillisiin käytäntöihin.	Tutkinnon suorittaneen hankkimat tiedot perustuvat työelämän ja sen kehittämisen vaatimuksiin sekä tutkimus- ja kehittämis-toimintaan tai taiteellisiin lähtökohtiin.
TAIDOT *(skills)*	**Kieli- ja viestintätaidot** *(language and communication skills)*	Yhden kotimaisen kielen erinomainen ja toisen tyydyttävä taito sekä vähintään yhden vieraan kielen riittävä suullinen ja kirjallinen taito.	Yhden kotimaisen kielen erinomainen ja toisen tyydyttävä taito sekä vähintään yhden vieraan kielen sellainen suullinen ja kirjallinen taito, joka on tarpeen ammatin harjoittamisen ja ammatillisen kehityksen kannalta.
		Riittävä kyky viestiä suullisesti ja kirjallisesti sekä alan että alan ulkopuoliselle yleisölle.	Kyky viestiä suullisesti ja kirjallisesti asianomaiseen tehtäväalueeseen liittyvistä kysymyksistä sekä asiantuntijoille että yleisölle.
		Työelämän edellyttämät tieto- ja viestintätekniset taidot.	Työelämän edellyttämät tieto- ja viestintätekniset taidot.
		Kyky kansainväliseen viestintään ja vuorovaikutukseen.	Kyky kansainväliseen viestintään ja vuorovaikutukseen.
KOMPETENSSIT *(competences)*	**Kognitiiviset kompetenssit** *(cognitive competences)*	Valmiudet tieteelliseen ajatteluun ja tieteellisiin työskentelytapoihin tai taiteellisen työn edellyttämät tiedolliset ja taidolliset valmiudet.	Valmius soveltaa oman alan tutkimustietoa ja työtapoja uusiin ja muuttuviin tilanteisiin tai taiteellisen työn edellyttämät tiedolliset ja taidolliset valmiudet.
		Edellytykset toisen syklin tutkintoon johtavaan koulutukseen.	Edellytykset toisen syklin tutkintoon johtavaan koulutukseen.
		Valmius jatkuvaan oppimiseen.	Valmius jatkuvaan oppimiseen.
	Työelämässä vaadittavat kompetenssit *(professional competences)*	Kyky soveltaa opintojen aikana hankittua tietoa työelämässä.	Kyky soveltaa tietoja ja taitoja työelämässä ja työskennellä itsenäisesti alan asiantuntijatehtävissä tai yrittäjänä sekä osallistua työyhteisön kehittämiseen.
		Edellytykset toimia alan työtehtävissä.	Tehtäväalueen laaja-alaiset ammatilliset taidot ja perusedellytykset toimia alan yrittäjänä.
		Alan kansainvälisen toiminnan edellyttämät valmiudet.	Alan kansainvälisen toiminnan edellyttämät valmiudet.
	Eettiset kompetenssit *(ethical competences)*	Kyky huomioida eettiset näkökohdat ja toimia niiden mukaan.	Kyky huomioida eettiset näkökulmat ja toimia niiden mukaan.

Attachment 2(2)

National framework for subject specific competences of the degree programme in business administration (recmmendation) (Source: Country report in the framework of the Balama study. Finland. 2009, Appendix 3.)

Subject specific competences Degree programme in Business Administration	**Description of the competence** Bachelor of Business Administration
Business competence (core modules)	▪ is able to recognise and describe the most essential business processes in a company, understands the effect of different aspects of business economics on each other. ▪ understands the interaction between business environment and business operations in a company, adopts entrepreneurial attitude. ▪ understands the basics of profitable entrepreneurship and is able to analyse the operations of a company, recognises risk factors. ▪ understands the effect of individual on work community and adopts successful and profitable ways of action. ▪ understands the significance of communication and actively creates contacts both with internal and external partners in national and international business environments.
Advanced business competence (specialisation modules)	▪ has advanced knowledge and skills of different aspects of business economics following the profiling provided by the student's own university of applied sciences in forms of specialisation options (e.g. financial administration, marketing), line of business, regional impact, and internationality.
Methodical business competence (support)	▪ masters the basics of research and development required by the process of adopting deep business competence. ▪ is able to apply commercial mathematics and statistical methods, masters the required data systems. ▪ is able to apply both quantitative and qualitative research methods.
Applied business competence (transferable skills modules)	▪ is able to apply theories of business economics and masters creative problem solving in, for example, internship, project studies, and thesis. ▪ is able to apply the most recent research data on business economics in his/her work. ▪ is able to develop business processes and apply quality thinking.